

# HOME COMPUTING WEEKLY

AN ARGUS SPECIALIST PUBLICATION

July 23-29 1985 No 122 50p



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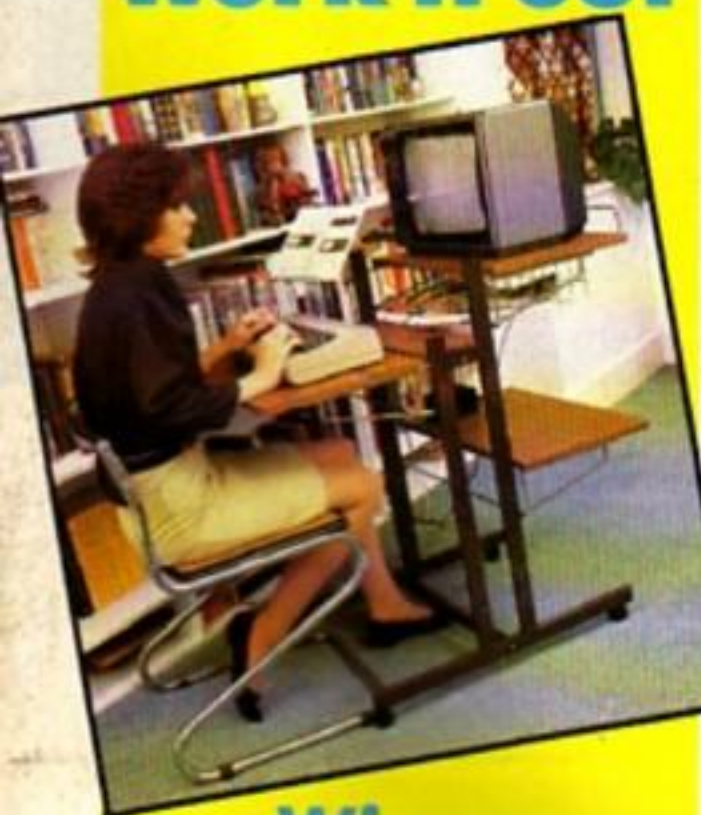
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membership for HCW readers p.46

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## "Pirate's days are numbered"

British software houses have given unanimous backing to the new legislation that makes software theft and piracy illegal.

The overwhelming consensus view is that the industry can now, with the backing of the law and the appointment of the Federation Against Software Theft (FAST) Enforcement Co-ordinator, as reported in last week's HCW, carry out a concerted campaign to track down and prosecute the software pirates.

William Powell, the MP who initiated the Copyright (Computer Software) Amendment Bill spelled out the message loud and clear for the software "cowboys": "Your days are numbered," said the Conservative member for Corby, "and anyone involved in piracy must stop now or they will be pursued 24 hours a day until they are put out of business."

Robert Hay, the former Metropolitan Police Superintendent who helped run the command centre during the Iranian Embassy siege, who is now Fast's Enforcement Co-ordinator, stated, "People must be educated to realise that if home

copying is widespread the industry will be in danger of disappearing."

Mike Fitzgerald of A and F software said, "I'm delighted. The Act is a very good thing for the whole industry and at last we can take the pirates through the courts knowing that the law is established and has teeth."

Microdeal are currently involved in three actions against individuals connected with software piracy. A spokesman for them said, "We have been actively involved in this campaign with GOSH (The Guild of Software Houses) and we wholeheartedly welcome this Act."

Richard Turner, managing director of Artic who have taken a hard line on software piracy, commented, "I think the new law is a step in the right direction." Artic was responsible for bringing software houses together to prevent a counterfeiting ring in Hull from operating by winning a court injunction. "Obviously this legal procedure is now a lot easier because you don't have to prove your point in law," added Richard.

The home user who copies tapes



Robert Hay of FAST

must be made aware of the fact that he is not only committing an offence but also contributing directly to the decline of the industry.

This point was graphically illustrated by Nick Alexander of Virgin Games who is a member of the board of FAST.

"A year ago there were 300 software houses. Today there are around a hundred. Piracy is a major factor contributing to this situation."

Those who are involved in home copying should be thinking of their own futures as well as the industry's because in many cases they are interrelated. "Many of the youngsters who do home-copying will be looking for employment in this industry. When they start ringing round the software houses for jobs as programmers they will find there is only a fraction of the jobs that used to be there. People who copy are cutting off their noses to spite their face."

## M.U.D. larks from BT

British Telecom's new interactive game M.U.D. will be demonstrated and launched at the PCW show in September.

The Multi-User Dungeon is a fantasy based adventure game that has players interacting both with each other and with the computer. Although the game will be launched at the show, and the charmingly named MUD packs will be on sale - the game proper will not start until November 5.

Before then purchasers of MUD packs will be able to use the system free of charge. Normal charges are

in units of six minutes, each unit costing 20p, which makes an hourly charge of £2. Early users will be able to use the system until 5 November with only their postal charges to consider.

The game was devised by Roy Trubshaw and Richard Bartle and has taken them five years and 50,000 hours to develop. Originally available at Essex University and via Compunet, the new version has three times as many locations as the original and a new set of intelligent mobiles who prowl the land making life more difficult.

Firebird's Time capsule in Orbit p.23

Easy Amstrad Machine code p.26

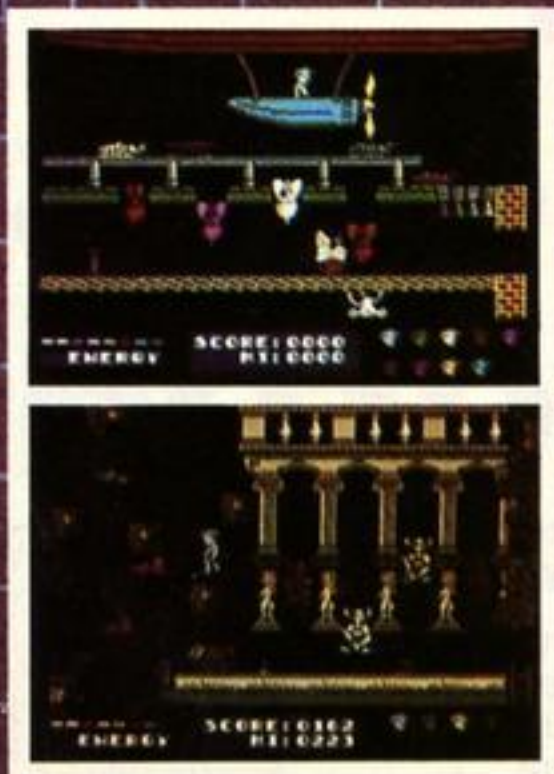
Fly High with our C64 game p.9

Beat the Bookie with your Spectrum p.32

Up to the minute - six pages of software reviews p.14



# WATCH OUT! IT'S



# DYNAMAMITE DAN

**94%**  
Crash  
Smash

"What makes the game is the graphics – large, witty, bizarre and beautifully animated . . . each screen has something remarkable, and horribly difficult puzzles . . . Dynamite Dan is not just another Miner surrogate and is at least as essential to your collection."

**Popular Computing Weekly.**

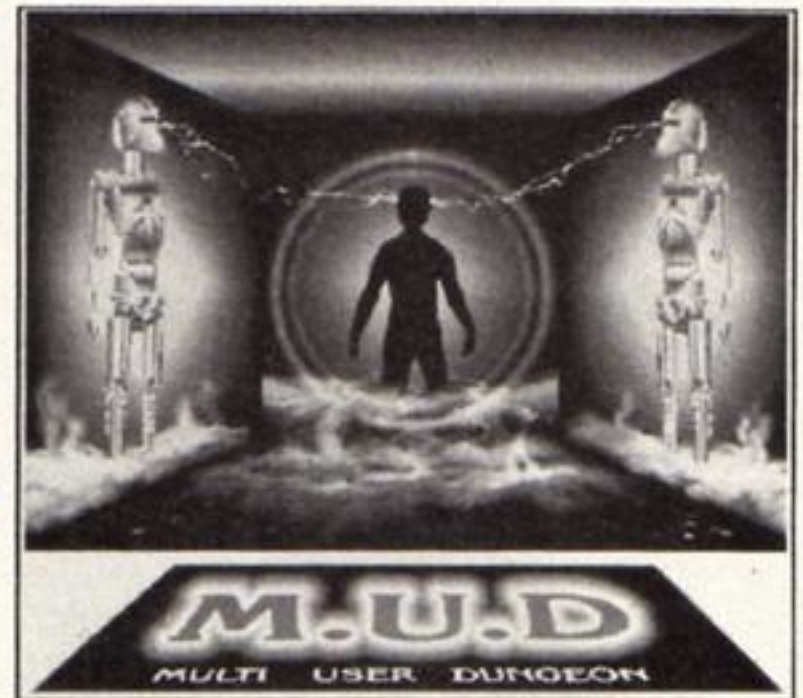
Popular  
Computing  
Weekly  
Pick of the  
Week

**48K Spectrum/Spectrum + £6.95**



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Trade orders to: Purnell Book Centre, Paulton, Bristol BS18 5LQ. Tel 0761 413301

# HOME COMPUTING WEEKLY



## Soapbox

We recently received a letter from Mike Rickett who reads his HCW in New Zealand. He gets the magazine three months after most of our readers but he isn't complaining about that!

He has written to tell me that we reviewed Amstrad Chopper Squad twice in HCW's 102 and 103. Oh dear! He also informs me that we gave the same game different ratings and takes me to task on that matter.

I have been thinking about this very subject for a few weeks now and hence this soapbox.

All the reviews in HCW are written by independent reviewers, a number of whom were readers of the magazine before they started to write to us. This means that they are written by computer enthusiasts for computer enthusiasts.

What it doesn't mean is that the same game will be given the same rating by two different reviewers, as happened with Chopper Squad. Reviews aren't objective they must be subjective.

What appeals to one reviewer may not appeal to another, despite them both having similar games interests. (Yes, we do send adventure games to adventure enthusiasts and arcade games to arcade players.) What I wouldn't expect is one reviewer to rave whilst another falls asleep. Within that broad spectrum (get it!) they will give you an honest opinion based on hours of program use.

What more could anyone ask?  
Dave

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- Clive Gifford's Music and the Micro conversion chart
- Bright Sprites for the C64
- Beebug's MUROM reviewed
- Plus — news, reviews, competitions and... ..Ron Complex

## AMSTRAD

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Argus Specialist Publications Ltd.  
 No. 1 Golden Square, London W1R 3AB. 01-437 0626

Home Computing Weekly is published on Tuesdays. Subscriptions and back issues: Infonet Ltd, 10-13 Times House, 179 Marlowes, Hemel Hempstead, Herts HP1 1BB. 0442 48432. Trade distribution: Argus Press Sales and Distribution Ltd, 12-14 Paul Street, London EC2A 4JS. 01-247 8233. Printed by Alabaster Passmore & Sons, Ltd, of London and Maidstone, Kent. Design and origination: Argus Design Ltd, Circus House, 26 Little Portland Street, London W1N 5AF

M.U.D. is...

the boy from  
 Walthamstow

01-608 1173



British Telecom plc

S  
W  
E  
N

**Britain's first school-to-home link-up**

Garth Hill Secondary School, Bracknell, have initiated a unique scheme with the help of CommunITel and Interlekt Electronics, whereby parents with home computers will be able to link-up to a special information bank at their children's school.

Parents can dial-up the school to find out such information as sports fixtures and clubs, subjects open to their children, and the range of evening classes for adults.

Garth's headmaster, Stanley Goodchild, is very excited about the operation which he sees as "cementing . . . an extremely close working relationship with parents . . ." and also as another first in their list of innovative information technology teaching.

In 1983 it opened its computer Centre from where the first international Data-Link was made and now have a working hi-tech office and weather satellite receiver — gone are the days of tin-can telephones and jungle-jims!

**Ramboard Reduction**

Micro Component Trading, a Norwich based components firm, has announced a price reduction for its 64k Ramboard for the C16 from £59.95 to £49.95.

This substantial drop is said to be possible due to more efficient production techniques.

**Micro Component Trading, Group Hse, Fishers Lane, Norwich, Norfolk NR2 1ET.**

**New Man at Activision**

Activision has announced the appointment of Hugh Rees-Parnall as the new managing director of its UK operation as from September.

Hugh has worked on the marketing side of the entertainments business for the past three years and Gregory Firschbach, president of Activision International, is very pleased about the appointment. "Hugh's experience and leadership will make a valuable contribution — not only to our activities in the UK — but throughout the world."

**Softaid Sponsorship**

Regal Software Supplies are running a 24-hr sponsored Elitethon (on the C64) to raise cash for Softaid.

The three week preliminaries are already under way at Regal's shop in Gillingham. Anyone can enter and can have many hour-long attempts at 50p a go. The finals will be made up of those with the highest credit scores and a trophy will be awarded to the overall winner.

So if you fancy a bit of fun and testing your skills (bring a friend if you like — the game allows for a co-pilot) for a good cause — get in touch with Steve Gurdler at the address below.

**Regal Software Supplies, 49 High St, Gillingham, Kent. 0634 579634.**

**Sporting Chance**

Pass UK and Epson have come up with a device which could help alleviate the problems of entrance control at football matches.

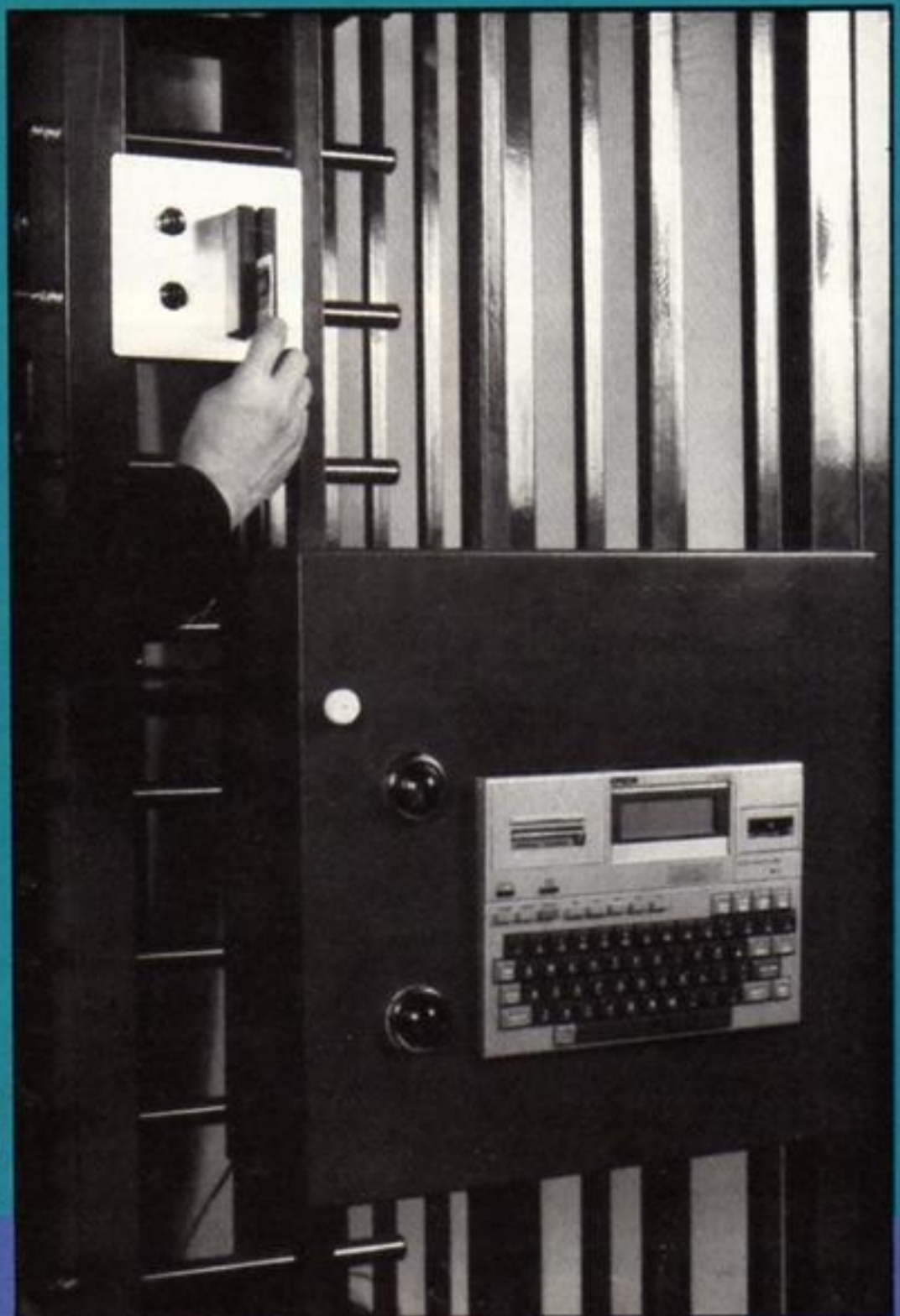
PASS is based on the Epson HX-20 portable computer and uses a magnetic encoder similar to that used for credit cards. If the system is adopted by the F.A. it would be installed at each turnstile to ensure supporter segregation and security.

Where a visiting team also uses PASS they can send their membership list on cassette or disc to the ground to allow segregation of visitors as well.

An important feature is that stewards can release the turnstile mechanism to provide additional exits in case of emergency — all good ideas which could help promote a more peaceful sporting future.

**Epson (UK), Dorland Hse, 388 High Rd, Wembley, Middx HA9 6UH.**

The access control system — from Epson and Pass U.K.



### Software Update

What a lot we got this week!

To be honest a number of the titles won't be released until the Autumn and that usually means the Personal Computer World Show in September. This is certainly the case with the Activision titles which are detailed here.

Quite a range they are too. I can't really understand why the C64 should have the American Road Race and the Spectrum the European one but I suppose there is a certain logic to it.

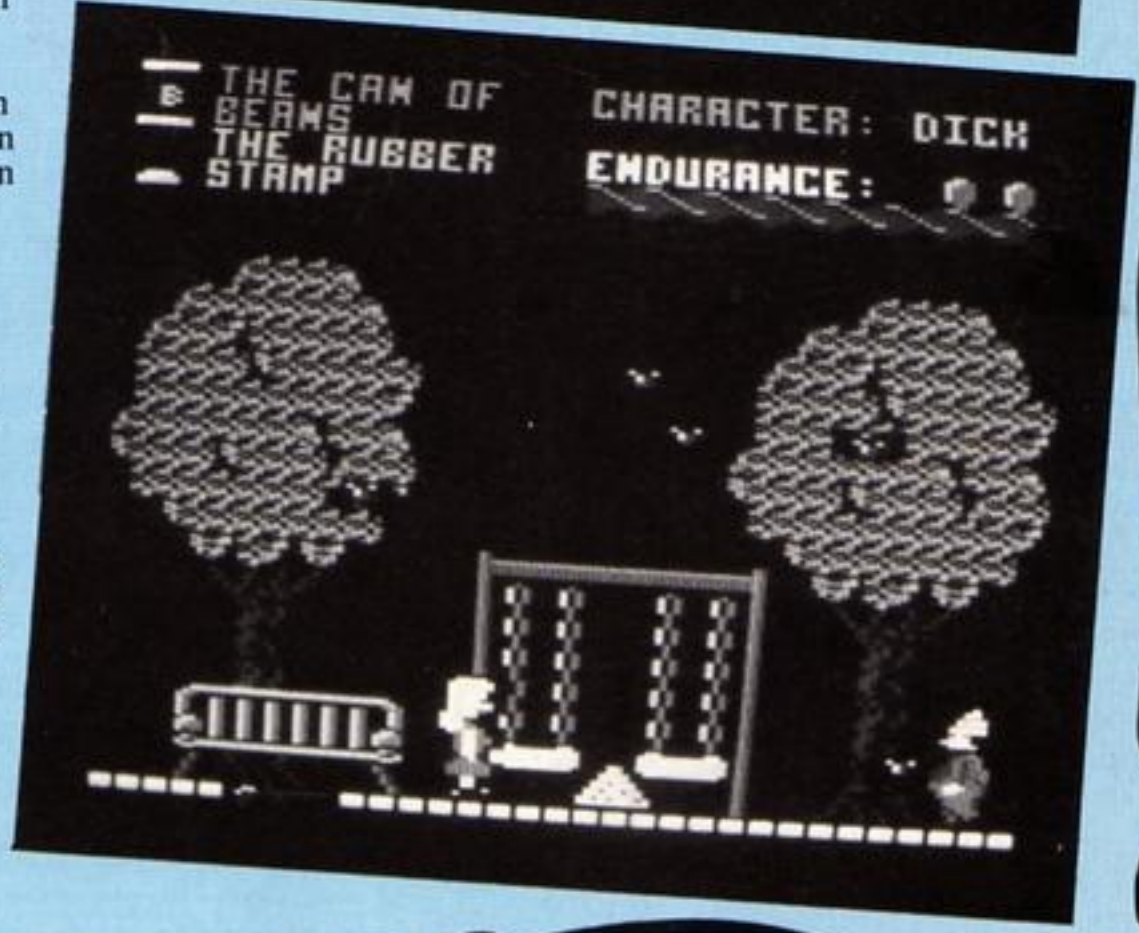
As we announced last week, the sequel to Dragontorc, itself a sequel to Avalon, is to be called Astro-Clone after a last minute name change. But Maroc won't be walking from Dragontorc into the new game. Instead you can thrill to the robotic clones and the 21st cen-

tury Sieddab Warriors. The game is due for release in early October.

Ultimate, that spy proof software house from middle England, has announced two new titles for later release. Nightshade has you wandering around a lost village trying to lift an ancient curse and thereby release the poor hapless prisoners. Blackwyche is another of the Arthur Pendragon adventures in which you find yourself on an evil ship. Perhaps it's something to do with all that country air!

Finally, Shards are looking to increase the interest in the Acorn machines with a whole list of new BBC and Electron conversions. They seem to be well priced and should please users of these computers.

Title	Machine	Price	Publisher
American Cross Cntry Race	C64, Atari	£9.90	Activision
Tour de France	C64	£9.90	Activision
World Champ'ship Boxing	C64	£9.90	Activision
European Cross Cntry Race	Spectrum	£9.90	Activision
Mind Shadow	C64, Ams, Spec, Atari	£9.90	Activision
Rescue on Fractalus	C64, Atari	£9.90	Activision
Hacker	C64, Spec, Atari	£9.90	Activision
Shadow of the Bear	Amstrad	£3.95	Kuma
N. Sea Bullion Adv	Amstrad	£3.95	Kuma
Ghostbusters	Atari (Disc)	£14.99	Activision
Shadow of the Unicorn	Spectrum	£14.95	Mikro-gen
Everyones a Wally	Amstrad	£9.95	Mikro-gen
Astro-Clone	Spectrum	??	Hewson
Vagan Attack	Amstrad, C64	£1.99	Atlantis
Dickies Diamonds	C64	£2.99	Atlantis
Chinese Patience	Spectrum	£1.99	Atlantis
Super Brat	Spectrum	£1.99	Atlantis
Blackwyche	C64	£9.95	Ultimate
Nightshade	Spectrum	£9.95	Ultimate
Juggernaut	Spectrum	£7.95	CRL
Whizzard	C64 (Disc)	£12.95	CRL
Highway Encounter	Spectrum	£7.95	Vortex
Downtown New York	Spectrum	£7.95	The Edge
Fairlight	Spectrum	??	The Edge
Wizardry	C64	??	The Edge
Galilee	BBC/Electron	£6.95	Shards
Fun Academy	BBC (disc)	£14.95	Shards
Woodbury End	BBC/Electron	£7.95	Shards
The Lost City	BBC/Electron	£7.95	Shards
Operation Safras	BBC/Electron	£7.95	Shards
Jericho Road	BBC/Electron	£6.95	Shards
C	Amstrad	£34.95	Hisoft
Abu Simbel Profanation	Spectrum	£7.95	Gremlin



M.U.D is...

01- 608 1173



"the Host in the machine"

## Playaway

**N** Anne Menneer is hoping to soften the hi-tech image of computer games with Kiddisoft — a computer tape magazine for children.

Aimed at the four to eight year old market, the emphasis is on fun and simplicity with word-games, puzzles and competitions. Anne has plenty of experience to base the games on — she has four children of her own.

The second in the Kiddisoft series has just been produced and a third is on its way. Each tape contains six programs and costs £3.99.

Kiddisoft, 5 Nanpusker Rd, Hayle, Cornwall. TR27 5JX.

## Tatung — new investment

Norman Lamont M.P. cast his eye over the opening, last week, of Tatung's information technology factory in Shropshire.

Tatung, the Taiwanese electronics giant, invested £2.8 million in the factory which will employ over 700 people. The main area of manufacture will be computers and computer monitors, colour televisions and specialist circuit boards.

Tatung's most successful computer-to-date, the Einstein, was designed as an intermediary between hobby and business and is said to be selling at the rate of 60,000 a year — priced at £499 (plus VAT).

Tatung, Stafford Park 10, Telford, Shropshire TF3 3AB

## We are the champions!

Warwick School was the overall winner in the British Computer Society/Commodore Schools Quiz earning their school £1600 worth of Commodore computers and peripheral equipment.

The runners up, Woodchurch High School of Birkenhead, received a second prize of Commodore equipment worth £700.

Each member of the winning team was presented with a voucher for a free week's Computer Camp Course at Camp Beaumont.

Warwick School was no doubt delighted with their booty and justifiably proud at having battled its way to the top from the original four hundred contenders.

## PCW's Olympia Show

The 8th Personal Computer World Show will be at Olympia from the 4th to 8th September (open to the general public from the 6th onwards).

Britain's largest personal computing event will include all the big names including Acorn, Amstrad, Atari, Commodore, Sinclair and MSX.

The show will cater for everyone from the businessman to the occasional arcade player. There will be stalls — educational, business, home users and future-role-of-the-micro stalls and a complete cross-section of hardware, software and peripherals.

The first two days of the show will be reserved to trade and business only. Admission for the general public is £2. Tickets available in advance from PCW Show, 11 Manchester, London W1M 5AB.

PCW Show Information Unit  
MPA, 8-10 Hallam St, London  
W1M 5AB

## Silver lining

Twenty lucky HCW readers will soon be the proud owners of red cassette cases with a silver lining.

They were the winners of our Firebird competition and each prize is a complete set of Silver range titles from Firebird. The questions were all about Silver and had a few of you scratching your heads. The answers are:

- 1 The chemical symbol for Silver is Ag.
- 2 EPNS stands for Electro Plated Nickel Silver.
- 3 Silver is bought and sold by Troy weight.
- 4 Argentina is named after the Latin name for silver.
- 5 The Long Ranger's horse was called Silver.
- 6 You have to be married for 25 years in order to celebrate your silver wedding.

Besides the twenty winners, cases and cassettes have also been sent to five readers who will celebrate their silver wedding this year courtesy of Firebird. HCW offers its congratulations too.

The winners are: R A Houlton, St Helens; P R Garwood, Woodbridge; Paul Buckton, Boreham Wood; Michael Griffiths, Rochester; N Smith, Burton-on-Trent; G S Williams, Barnsley; Ian Lester, Knutsford; R A Robinson, Leeds; A S Denby, Alcester; Jack Hughes, Cadishead; Nigel Impey, Higham Ferrers; Jonathan Biddle, Leiston; D R Overy, Tidworth; Clive Viagas, Gibraltar; David McCalmon, Ballyclare; R L Stacey, Sheffield; D Carpentier, Wimbledon; Tony Raven, Llanelli; Ken Pillar, Saundersfoot; Simon Kiddle, Rainham.

## Go-Slow

If you've ever found this computer lark all a bit too fast — Slomo, from Nidd Valley Micro Products might well be the answer.

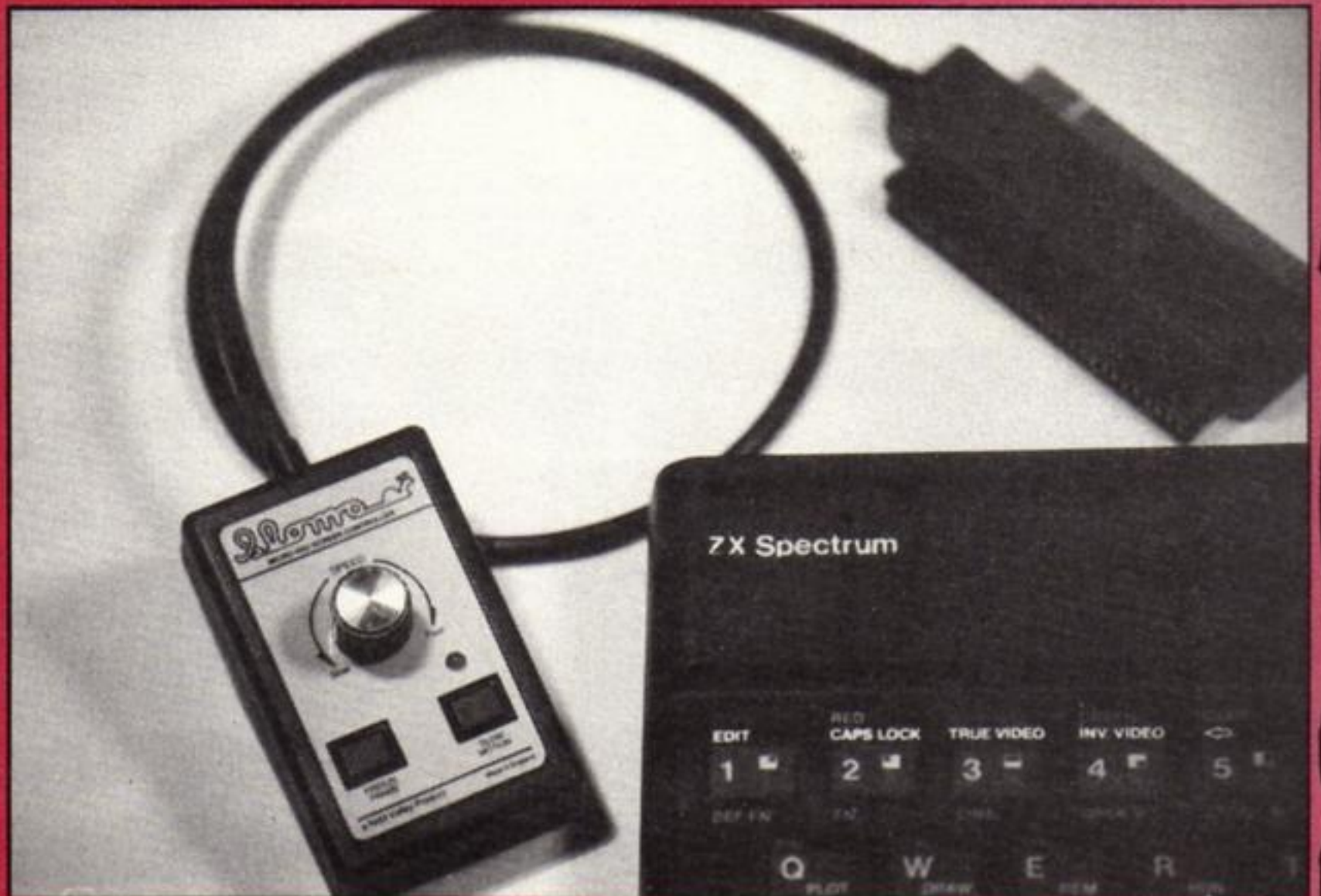
Slomo is a device which slows down your micro so that you can work at your own pace and obtain variable skill levels to suit.

It could be beneficial not only to children and adults who lack either co-ordination or confidence, but could also prove of use to the disabled user.

Its main features are a freeze frame control, listing which can be viewed line by line, instead of mass-scrolling, and the ability to slow down graphics to view pixel by pixel, and sound, note by note.

Slomo is available for the Spectrum, BBC, C64 and is priced at £14.95.

Nidd Valley Micro Products, Stepping Stones Hse, Thistle Hill, Knaresborough, HG5 8JW, North Yorks.



At your own pace — Nidd Valley's Slomo



# ATARI ST

## 520ST

**POWER WITHOUT THE PRICE**

**THE NEW ATARI 520ST**

Under the new leadership of Jack Tramiel (former boss and founder of Commodore Business Machines), Atari Corporation have marked their entry into the world of business/personal computers with a machine which leaves the competition standing. Tramiel's slogan 'Power Without the Price' has been implemented in the manufacture of the new 512K Atari 520ST colour computer which offers the user amazingly high performance at an incredibly low price. Launched as a work-station, this new system incorporates seven software packages as well as the 520ST computer with 512K RAM, mouse controller, high resolution monochrome monitor (640x400), 95 key keyboard (with 18 key numeric keypad), MIDI interface, GEM and a 500K 3 1/2 inch disk drive, all for the package price of only £851.30 (+VAT = £749). Dubbed the 'Mac beater' and the 'Jackintosh' (after Atari's Chief, Jack Tramiel), Atari's new machine has been directly compared with the Apple Macintosh RRP £2595 (+VAT = £2985) which offers similar features and capabilities but at a much higher price. Favourably reviewed by the UK's highly critical specialist computer press, the 520ST is likely to make a great impact in this country as a sophisticated alternative to an IBM PC, APRICOT or APPLE MACINTOSH. Unlike its overpriced competitors, the Atari 520ST can be linked up to a colour monitor to unleash a choice of up to 512 colours. The addition of colour brings out the full potential of graphics packages such as GEM.

**USER FRIENDLY GEM OPERATING SYSTEM**

The power of the ST is harnessed and made user friendly by the new operating system 'GEM' from Digital Research. GEM stands for Graphics Environment Manager and allows a user friendly colour or B/W graphics interface which closely resembles that of the Macintosh. This similarity extends to the use of moveable resizable windows, icons to represent objects such as disks and disk drives, and the use of pull down menus and a mouse. The advantage of all this is that the computer becomes extremely easy to use. GEM has now been implemented for the Acorn, ACT, Atari, IBM, ICL, and Olivetti. Software written for GEM on one computer should also run under GEM on another computer. This will enable the market to quickly produce a large library of standard interchangeable software.

**FREE SOFTWARE AND FUTURE EXPANSION**

The Atari 520ST comes supplied with seven free software packages as listed below: 1) TOS - Tramiel Operating System based on CPM 88K. 2) GEM Graphics Environment Manager by Digital Research (DR) giving a WIMP (Window, Icon, Mouse, Pull down menu) environment. 3) DR GEM Paint for creating graphics masterpieces. 4) DR GEM Write for word processing. 5) Logo learning language to enable you to write your own programs easily using turtle graphics. 6) DR Personal Basic a powerful user friendly version of the Basic programming language. 7) BOS operating system giving you access to dozens of business applications packages already available on the market. Designed with future expansion in mind, the ST also features a host of different interfaces to the outside world and an impressive list of accessories is planned. Atari will soon be releasing a 1000K (1MB) 3 1/2 inch disk drive, and a 15MB hard disk storage system as well as a mass storage compact disk (CD) player capable of storing an entire 20 volume encyclopedia on one disk. A full range of inexpensive printers are planned including dot matrix, daisywheel and thermal colour printers. With its unbeatable graphics, speed and software at a price which is far below that of any comparable personal computer currently on the market, the ST is all set to do battle with the competition. To receive further details of the ST from Silica Shop, just fill in the coupon below with your name and address details and post it to us.

**Silica Shop Price: £851.30 + £97.70 VAT = £749.00** This price includes:

- ★ 512K RAM
- ★ B/W MONITOR
- ★ MOUSE
- ★ 500K 3.5" DISK DRIVE
- ★ GEM
- ★ KEYBOARD (95 KEYS)

# £749

**ATARI 520ST SPECIFICATION**

**MEMORY**  
512K RAM (524,288 bytes)  
16K ROM expandable to 320K  
Port for addnl 128K plug-in ROM cartridges  
200K TOS operating system

**GRAPHICS**  
Individually addressable 32K bit-mapped screen with 3 screen graphics modes:  
320x200 pixels in 16 colours (low resolution)  
640x400 pixels in 4 colours (med resolution)  
640x400 pixels in monochrome (high res)  
16 shades of grey in low res mode  
512 colours available in low/medium res  
8 levels of each in red, green and blue

**ARCHITECTURE**  
4 custom designed chips:  
GLUE Chip - MMU Memory Mngmt Unit  
DMA Controller - Graphics Processing Unit  
16.32 bit Motorola 68000 processor at 8MHz  
eight 32 bit data registers  
eight 32 bit address registers  
16 bit data bus/24 bit address bus  
7 levels of interrupts/56 instructions  
14 addressing mode/5 data types

**DATA STORAGE**  
High speed hard disk interface  
Direct memory access 1.33 Mbytes per second  
CD (Compact Disc) interface  
Built in cartridge access  
Dedicated floppy disk controller

**DISK DRIVE**  
500K (unformatted) 5 1/4" floppy d-drive  
349K (formatted) storage capacity

**SOUND AND MUSIC**  
Sound Generator  
Frequency control from 30Hz to above audible  
3 voices (channels) in wave shaping sound in addition to a noise generator  
Separate frequency and volume controls  
Dynamic envelope controls  
ADSR (Attack, Decay, Sustain, Release)  
Noise generator  
MIDI interface for external music synthesizers

**KEYBOARD**  
Separate keyboard microprocessor  
Standard QWERTY typewriter styling  
Ergonomic angle and height  
95 keys including 10 function keys  
Numeric keypad - 18 keys including ENTER  
One touch cursor control keypad

**MONITOR**  
12" screen - high res monochrome monitor  
640x400 monochrome resolution  
Note: Some of the above specifications are pre-release and may therefore be subject to change

**VIDEO PORTS**  
Display - Low Resolution - 40 columns  
Med/High Res - 40/80 plus cols  
Medium res RGB (Red/Green/Blue) output  
High resolution monochrome (Black & White)

**COMMUNICATIONS**  
Bidirectional centronics parallel interface for printers, or modems capable of input/output  
RS232C serial modem/printer interface  
VT52 Terminal Emulation Software  
Maximum Baud Rate up to 19,200  
High speed hard disk interface  
Floppy disk controller (Western Digital)  
2 joystick ports (one for 2 button mouse)  
MIDI interface for external music synthesizers

**GEM WIMP ENVIRONMENT**  
WIMP - Window Icon Mouse Pop-down menus  
Two button mouse controller  
Icons/Pull down menus/Windows  
GEM VDI - Virtual Device Interface  
GEM AES - Application Environment Services  
GEM SBT - Bit Block Transfer  
Real time clock & calendar

**SOFTWARE**  
GEM environment with user friendly Macintosh style operation  
TOS - Tramiel Operating System  
Atari's own system based on CPM 88K with hierarchical directory & file structure plus a host of MS DOS & UNIX command structures  
BOS - Business Operating System to run any standard BOS business programs  
GEM desktop with GEM PAINT graphics mgmt system and GEM WRITE word processor  
Personal BASIC and DR Logo originally written by Digital Research (DR) Very much like those on other machines except for the extensive use of pull down menus, mouse control and windows

**VARIOUS**  
Dimensions: 470mmx240mmx100mm  
Replaceable external power supplies  
Expansion 3 1/2" floppy disk drives 500K/1,000K  
Two drives can be connected  
3 1/2" 15MB hard disk  
CD (compact laser disc)  
Dot matrix & d/wheel prints (black)  
Thermal dot matrix (colour)  
RGB & monochrome monitors

**LANGUAGES**  
BASIC & LOGO supplied  
Many others will soon be available, including: Assembly, BCPL, C, Cobol, Compiled Basic, Lisp, Modula-2 and Pascal

**MACINTOSH v F10 v 520ST**

"Imagine a Fat Mac - the 512K Apple Macintosh - but with a bigger screen, a far bigger keyboard with numeric keypad, cursor and function keys, and colour. That gives you some idea of what the Atari 520ST is like, except for two important things. First the Atari seems faster. Second the Atari system is about one third of the price." June 1985 - Jack Schofield - PRACTICAL COMPUTING

FEATURES OF BASIC SYSTEM	APPLE MACINTOSH	APRICOT F10	ATARI 520ST
	Price includes B/W Monitor	YES	NO - extra £200
Keyboard size mm (LxDxH)	330x147x50	450x167x28	470x240x60
Keyboard size ins (LxDxH)	13x5 7/8x2	17 1/8x6 1/8x1	18 1/8x9 1/2x2 1/8
3 1/2" D/Drive (Unformatted)	500K	500K	500K
3 1/2" D/Drive (Formatted)	399K	315K	349K
WIMP (Window, Icon, Mouse...)	Apple	ACT - Activity	GEM
Real-time Clock	YES	YES	YES
Polyphonic Sound Generator	YES	NO	YES
RS232 Serial Port	YES	YES	YES
Centronics Parallel Printer Port	NO	YES	YES
Dedicated Floppy Disk Controller	NO	YES	YES
Hard Disk DMA Interface	NO	YES	YES
Full stroke keyboard	YES	YES	YES
Number of keys on keyboard	59	92	95
Numeric Keypad	NO	YES (16 Keys)	YES (18 keys)
Cursor Control Keypad	NO	YES	YES
Function keys	NO	10	10
16-bit processor	68000	Intel 8086	68000
Processor running speed	8MHz	4.77MHz	8MHz
RAM size	512K	256K	512K
Number of graphics modes	1	4	3
Number of colours	Monochrome	16	512
Max Screen Resolution (pixels)	512 x 342	640 x 256	640 x 400
Mouse included	Single Button	NO - extra £95	Two Button
Replaceable External Power Pack	NO	NO	YES
Cartridge Socket	NO	NO	YES
Joystick Ports	NO	NO	YES (two)
MIDI Synthesiser interface	NO	NO	YES
Monitor Size	9"	9" - extra £200	12"
RGB Video Output	NO	YES	YES

**System Cost with: Mouse - Monochrome Monitor - 512K RAM - 500K Disk Drive**

Price of basic system (exc VAT)	£2595-VAT	£595-VAT	£852-VAT
+ Mouse	Included	£95-VAT	Included
+ Monochrome Monitor	Included	£200-VAT	Included
+ Expansion to 512K RAM	Included	£295-VAT	Included
Price of complete system (exc VAT)	£2595-VAT	£1185-VAT	£852-VAT

**PRICE** rounded down including VAT    **£2,984**    **£1,362**    **£749**

"Atari's new corporate image as an aggressive low cost computer maker is likely to mirror that of Commodore where Mr. Tramiel established the maxim that 'Business is war'." August 21st 1984 **FINANCIAL TIMES**

"This is the only personal computer I know of that comes with a MIDI interface as standard." Peter Bright March 1985 **PERSONAL COMPUTER WORLD**

"The (GEM) version running on the Atari 8000 machines will have the additional advantage of leaving the PC version standing." April 6th 1985 **PERSONAL COMPUTER NEWS**

"It would seem that GEM offers the ideal operating system." March 7th 1985 **POPULAR COMPUTING WEEKLY**

"I found it (GEM) extremely easy to use and was very impressed with the way in which it disguises the unfriendly hardware and operating systems lurking under the surface." Peter Bright Feb 1985 **PERSONAL COMPUTER WORLD**

**PRESS COMMENT**

"The electronics in the machine are a work of art... The heart of the 520ST is a Motorola 68000, one of the most powerful 16-bit processors around and in many respects it is close to being a 32-bit chip... when the machine appears in the shops, it'll be at the front end of the queue to buy one." Peter Bright June 1985 **PERSONAL COMPUTER WORLD**

"This machine is significantly more powerful than an IBM PC... if it's possible to design a sure-fire winning machine, this is it." May 11th 1985 **PERSONAL COMPUTER NEWS**

"... the use of GEM makes the new range of Atari computers so similar to the Macintosh (with the added attraction of colour), that they are already being called 'Jackintoshes'." May 2nd 1985 **COMPUTING**

"The new Atari ST computers truly represent to the consumer what Jack Tramiel is saying - easy-to-use computing power without the price." March 1985 **ANALOG COMPUTING**

"It (the ST) uses the most modern technology that is affordable, in a package that gives a professional impression." May 23rd 1985 **POPULAR COMPUTING WEEKLY**

"The Atari ST is one of the most elegant designs I have seen... Atari has used an original and elegant method of memory management which should make the ST faster than any other PC on the market - in any price bracket... The \$6K dollar question is would I go out and spend money for one? To which the only answer is 'Try and stop me!'" John Lambert July 1985 **ELECTRONICS & COMPUTING**

"The 520ST is technically excellent... The 520ST hardware is the new standard by which others will be judged." July 1985 **YOUR COMPUTER**

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# HIGH FLIER



**A real micro-adventure for the C64 by Gavin Adair but even bacteria can loom large and lethal on this Lilliput scale.**

Victerians are a very small race of beings which come from CERES III. Although these creatures measure only 1/4 of a millimetre they are highly intelligent. When they die, (they live for only seven seconds), the Victerians turn into ghosts and then travel to earth where they spend thousands of years exploring earth's outer atmosphere before returning to haunt their planet.

Nathian was one such Victerian. One day, while he was exploring, he was attacked by Ballbarians, a small form of



bacteria which has the power to change shape. If Nathian touched any of these Ballbarians, they would make him "non existent". The only way Nathian could escape being made "non existent", was to collect three anti-energy power crystals.

These would cause the Ballbarians to change shape, and because the Ballbarians could only change shape six times, if Nathian could collect eighteen anti-energy power sources, the Ballbarians would overload themselves and die.

Features of the game include: four way scrolling and fading character set.

#### Controlling your Victerian

The game uses a joystick in port two.

When the joystick is pushed in the desired direction, the screen will scroll around the ghost in the middle of the screen. If anything touches it apart from the crystal, you will lose one life, touching the crystal three times will cause you to move on to the next screen.

#### Hostages

Sometimes, the Ballbarians will, foolishly, take the crystals hostage. You will know this has occurred because

1 You will see no crystal on the screen.

2 You will see part of the crystal behind a Ballbarian.

Reclaiming the crystal is easy, just attack one of the Ballbarians (by ramming it). This will cause the Ballbarians to release their hostage.

#### Options

When the title screen appears, you will have three options.

1 To change the number of lives during game, by pressing the space bar to a maximum of six.

2 To choose which level the game will begin on, by pressing CLR / HOME. Up to level two.

3 Begin game.

#### Hints on play

A good score is anything above 20,000. Hints on getting good scores follow.

1 Practice scrolling the screen to its full ability. This can be done during the title screen.

2 Wiggle the joystick as fast as you can in a circle during play, this will slow your speed down.

3 When you are about to move onto a new screen, there will be a short delay. During this delay, it is a good idea to push the joystick in the opposite direction that you were travelling before you collected the third crystal.

### Variables

SC score  
EX bonus  
LV lives left  
GB A. E. P. crystals collected  
I, A, X, B general  
L current level  
V VIC chip (53248)

### Hints on conversion

Conversion of this game to other machines would be very difficult as it uses the C64's sprite graphics and sound facilities. There is also a large machine code routine at the beginning of the program.

### How it works

10-46 machine code routines  
150-467 sprite data  
470-565 screen set up  
580-767 title screen  
770-820 define different screens  
821-930 main routine  
2000 collect a A. E. P. C and  
move on to new level  
3000 game over routine  
4000 destroy Ballbarians

```
0 POKE650,128
10 POKE53280,0:POKE53281,0:PRINT"[CLEAR]";
20 READA:IFA=-1THEN400
30 POKE40000+I,A:I=I+1:GOTO20
40 DATA162,0,160,0,189,167,2,157,4,208,168,136,136,136,136,152,157,167,2,232
50 DATA232,224,12,208,235,162,0,160,0,189,168,2,157,5,208,168,200,200,200,200
60 DATA152,157,168,2,232,232,224,12,208,235,174,30,208,224,1,208,5,169,200
70 DATA141,252,3,234,173,0,220,160,0,162,0,74,176,1,136,74,176,1,200,74,176
80 DATA1,202,74,176,1,232,74,142,52,3,140,53,3,173,52,3,201,1,208,15,162,75
90 DATA169,136,157,0,156,232,224,79,208,248,234,234,234,173,52,3,201,255,208
100 DATA15,162,75,169,200,157,0,156,232,224,79,208,248,234,234,234,173,53,3
110 DATA201,1,208,15,162,100,169,136,157,0,156,232,224,104,208,248,234,234,234
120 DATA173,53,3,201,255,208,12,162,100,169,200,157,0,156,232,224,104,208,248
130 DATA169,0,141,52,3,234,234,234,96,162,0,160,0,238,33,208,232,224,255,208
140 DATA248,200,192,255,208,243,96
141 DATA162,0,189,0,208,157,0,48,232,224,0,208,245,162,0,189,255,208,157,255,48
142 DATA232,224,0,208,245,162,0,189,254,209,157,254,49,232,224,0,208,245
143 DATA162,0,189,253,210,157,253,50,232,224,0,208,245,162,0,189,251,211,157
144 DATA251,51,232,224,0,208,245,162,0,189,251,212,157,251,52,232,224,0,208,245
145 DATA162,0,189,250,213,157,250,53,232,224,0,208,245
146 DATA162,0,189,249,214,157,249,54,232,224,0,208,245,96,-1
150 REM***START***
160 DATA0,0,0,0,60,0,0,247,0,3,253,192,3,253,64,15,253,112,15,255,112,15,255
170 DATA112,15,255,112,15,255,112,3,253,64,3,253,192,3,253,192,0,247,0,0,247,0
180 DATA0,60,0,0,60,0,0,0,0,0,2,0,0,0,160,0,0,10
190 DATA0,0,0,0,0,0,0,0,0,15,0,0,60,31,192,112,63,176,240,110,172,240,238,175
200 DATA243,254,171,127,250,171,63,250,171,31,186,171,6,250,171,3,254,175,0,126
210 DATA160,0,0,160,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
220 DATA0,0,0,0,0,0,0,0,0,0,0,240,3,248,60,13,252,14,53,118,15,245,119,15,213
230 DATA127,207,213,95,254,213,95,252,213,93,248,213,95,96,213,127,192,245,127
240 DATA0,5,120,0,5,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
250 DATA0,32,0,0,80,0,0,168,0,1,36,0,3,38,0,4,169,0,4,113,0,2,114,0,2,170,0,1
260 DATA172,0,1,36,0,0,168,0,0,168,0,0,80,0,0,32,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
270 DATA0,0,0,0
280 DATA0,0,0,0,168,0,2,170,0,10,170,128,63,255,240,247,119,124,63,255,240,15
290 DATA255,192,63,255,240,247,119,124,63,255,240,10,170,128,2,170,0,0,168,0,0
300 DATA0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
310 DATA0,0,0,0,0,0,0,252,0,3,251,0,3,251,0,15,254,192,15,254,192,15,254,192
320 DATA15,254,192,15,254,192,15,251,192,3,251,0,3,255,0,0,252,0,0,0,0,0,0,0
330 DATA0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
340 DATA0,0,0,0,0,0,0,62,0,0,127,128,0,228,192,0,100,128,0,238,220,14,251,246
350 DATA31,249,230,25,255,132,8,238,192,0,49,128,0,113,192,0,251,128,0,63
360 DATA192,0,255,192,0,118,96,0,34,32,0,0,0,0,0,0,0,0,0,0,0,0
391 DATA23,255,232,55,255,236,23,255,232,3,255,192,3,255,192,23,255,232,23,255
392 DATA232,3,255,192,3,255,192,23,255,232,23,255,232,3,255,192,3,255,192,23
393 DATA255,232,23,255,232,3,255,192,3,255,192,23,255,232,55,255,236,23,255,232
394 DATA0,0,0
395 DATA73,0,146,42,66,84,128,129,1,28,0,56,99,0,198,140,195,49,206,102
396 DATA115,48,195,12,15,56,240,0,4,0,32,2,2,112,18,7,112,12,7,60,0,30,31,129
397 DATA252,12,126,56,4,126,56,6,255,96,3,255,192,0,126,0,0,0,0
400 FORI=14848TO14910:READA:POKEI,A:NEXT
410 FORI=14912TO14974:READA:POKEI,A:NEXT
420 FORI=14976TO15038:READA:POKEI,A:NEXT
430 FORI=15040TO15102:READA:POKEI,A:NEXT
440 FORI=15104TO15166:READA:POKEI,A:NEXT
450 FORI=15168TO15230:READA:POKEI,A:NEXT
460 FORI=15232TO15294:READA:POKEI,A:NEXT
466 FORI=15360TO15422:READA:POKEI,A:NEXT
467 FORI=15424TO15486:READA:POKEI,A:NEXT
```

```

470 GOSUB21000
475 GOSUB480
476 GOTD580
480 PRINT "[CLEAR]"; :POKE53281,6:V=53248:POKEV+27,253:POKE53265,PEEK(53265)AND239
:LV=3
484 FORI=0T024:POKE54272+I,0:NEXT
485 SC=1000:EX=1000:POKEV+30,0:L=0:D=5:FORI=1T024
486 POKE54277,128:POKE54278,128:POKE54284,128:POKE54285,128:POKE54276,33
487 POKE54283,33
490 PRINT"                [RVSON][BLACK]                "
500 NEXT
505 PRINT"                [RVSON][BLACK]                ";
506 FORI=0T024:POKE1063+A,160:POKE1063+54272+A,0:A=A+40:NEXT
510 PRINT"[HOME]";
520 PRINT"                [RVSON][BLACK]  [c P][c P][c P][c P][c P][c
c P][c P][c P]  "
530 PRINT"                [RVSON][BLACK]  [c M][RVSOFF][CYAN] GHOSTS
[BLACK][RVSON][c G]"
540 PRINT"                [RVSON][BLACK]  [c Y][c Y][c Y][c Y][c Y][c
c Y][c Y][c Y]  "
541 POKEV+16,2:POKEV+2,12:POKEV+3,75:POKEV+28,253:POKEV+40,1:POKE2041,238:PRINT
542 PRINT"                [RVSON][BLACK]                ="LV:PRINT
543 PRINT"                [RVSON][BLACK]  [c P][c P][c P][c P][c P][c
c P][c P][c P]"
544 PRINT"                [RVSON][BLACK]  [c M][RVSOFF][CYAN] POINTS
[BLACK][RVSON][c H]"
545 PRINT"                [RVSON][BLACK]  [c Y][c Y][c Y][c Y][c Y][c
c Y][c Y][c Y]"
546 PRINT"                [RVSON][BLACK]                "
547 PRINT"                [RVSON][BLACK]                "SC
548 PRINT"                [RVSON][BLACK]                "
549 PRINT"                [RVSON][BLACK]  [c P][c P][c P][c P][c P][c
c P][c P][c P]"
550 PRINT"                [RVSON][BLACK]  [c N][RVSOFF][CYAN] EXTRAS
[BLACK][RVSON][c H]"
551 PRINT"                [RVSON][BLACK]  [c Y][c Y][c Y][c Y][c Y][c
c Y][c Y][c Y]"
552 PRINT"                [RVSON][BLACK]                "
553 PRINT"                [RVSON][BLACK]                "EX
554 PRINT"                [RVSON][BLACK]                "
555 PRINT"                [RVSON][BLACK]  [c P][c P][c P][c P][c P][c
c P][c P][c P]"
556 PRINT"                [RVSON][BLACK]  [c N][RVSOFF][CYAN] WAVE
[RVSON][BLACK][c H]"
557 PRINT"                [RVSON][BLACK]  [c Y][c Y][c Y][c Y][c Y][c
c Y][c Y][c Y]"
558 PRINT"                [RVSON][BLACK]                "
559 PRINT"                [RVSON][BLACK]                "L:POKE1937,176
560 PRINT"                [RVSON][BLACK]                "
565 POKE53265,PEEK(53265)OR16
580 PRINT"[HOME][DOWN]":V=53248:POKE54296,15:POKE54276,33:POKE54283,33:RESTORE
585 POKEV+0,125:POKEV+1,137:POKE2040,238:POKEV+39,1
590 POKE53265,PEEK(53265)AND239
591 FORI=4T015
592 B=INT(RND(0)*255)
593 POKEV+30,0:IFPEEK(V+30)<>0THEN791
594 POKEV+I,B:POKE679+I,B:NEXT:POKEV+23,0:POKEV+29,0:POKE53265,PEEK(53265)OR16
600 POKE2042,236:POKE2043,232:POKE2044,232:POKE2045,237:POKE2046,237
610 POKE2047,241:POKEV+28,124:POKEV+38,8:FORI=41T046:POKEV+I,1:NEXT:POKE54296,15
620 POKEV+47,3:POKEV+29,96:POKEV+23,96:POKEV+21,254:POKE198,0
630 PRINT"[HOME][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN]                HIGH FLIER":SYS4000
0
640 PRINT"[DOWN]  WRITTEN BY GAVIN ADAIR":SYS40000
650 PRINT"[DOWN]  JOYSTICK IN PORT TWO":POKEV+38,B+1
651 PRINT"[DOWN][DOWN]  [BLACK]PRESS                FUNCTION":SYS40000
652 PRINT"  @@@@                @@@@@@@@":POKE646,C
653 PRINT"  SPACE[[[[NUMBER OF LIVES"

```

```

654 PRINT"[DOWN] CLR HOME[[STARTING LEVEL":SYS40000
660 PRINT"[DOWN][DOWN] [BLACK]PRESS ANY KEY TO START":SYS40000
670 GETA$: IFA$="" THENB=INT(RND(0)*9):POKEV+38,B: IFB=6ORB=2THEN630
671 IFA$<>" THEN674
672 POKE646,B:C=B:GOTO630
673 POKE54276,129:POKE54283,129:POKE54296,0:GOSUB20000:GOTO680
674 SYS40000: IFA$="[HOME]" THENL=L+1: IFL=3THENL=0
675 SYS40000: IFA$<>"[HOME]" THEN677
676 SYS40000: PRINT"[HOME][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN]"TA
B(28)"[RVSON][BLACK] "L:POKE1937,176:GOTO670
677 IFA$="" THENLV=LV+1: IFLV=7THENLV=3
678 SYS40000: IFA$<>" THEN673
679 PRINT"[HOME][DOWN][DOWN][DOWN][DOWN] [RVSON][BLAC
K] ="LV:SYS40000:GOTO670
680 PRINT"[HOME][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN] "
690 PRINT"[DOWN] "
700 FORI=1TO12:PRINT" ":NEXT
770 V=53248:POKEV+21,255
771 POKE53265,PEEK(53265)AND239
772 GOSUB21000
779 V=53248:POKEV+21,255
790 FORI=4TO15
791 B=INT(RND(0)*255): IFM>30THEN794
792 POKEV+30,0: IFPEEK(V+30)<>0THENM=M+1:GOTO791
794 POKEV+I,B:POKE679+I,B:NEXT:POKEV+23,0:POKEV+29,0:POKE53265,PEEK(53265)OR16
795 IFL=1THEN811
796 IFL=2THEN814
797 IFL=3THEN816
798 IFL=4THEN818
799 IFL=5THEN2500
800 FORI=41TO46:POKEV+I,1:NEXT:POKEV+38,D:POKEV+37,1
810 FORI=2042TO2046:POKEI,232:NEXT:POKEV+28,124:POKE2047,235:POKEV+47,0:GOTO820
811 FORI=2042TO2044:POKEI,233:NEXT:POKE2045,234:POKE2046,234
812 FORI=41TO46:POKEV+I,1:NEXT:POKEV+38,12:POKEV+37,1
813 POKEV+29,124:POKEV+23,124:GOTO820
814 FORI=2042TO2046:POKEI,236:NEXT:POKEV+28,0:FORI=41TO46:POKEV+I,3:NEXT
815 POKEV+28,124:POKEV+38,8:POKEV+37,1:POKEV+29,124:GOTO820
816 FORI=2042TO2046:POKEI,237:NEXT:POKEV+28,0:FORI=41TO46:POKEV+I,1:NEXT
817 POKEV+23,124:POKEV+29,124:POKEV+38,8:POKEV+28,124:GOTO820
818 FORI=2042TO2046:POKEI,241:NEXT:POKEV+28,0:FORI=41TO46:POKEV+I,1:NEXT
819 POKEV+29,0
820 POKEV+21,255:POKEV+0,125:POKEV+1,137:POKE2040,238:POKE2047,235
821 SYS40000:M=PEEK(V+30): IFMAND1THEN2000
930 GOTO821
1000 V=53248: IFPEEK(V+30)>128THEN2000
1010 POKEV+21,255:LV=LV-1:A=70:FORI=0TO24:POKEI+54272,0:NEXT
1011 POKE54277,128:POKE54278,128:POKE54284,128:POKE54285,128:POKE54276,33
1012 POKE54283,33:POKE54296,15:POKE54272,100:POKE54279,100
1013 FORI=137TO0STEP-1.5:POKE54273,I:POKE54280,I+30:B=INT(RND(0)*15):SYS40000
1014 POKEV+39,B:POKEV+38,B+1:POKEV+1,I:POKEV+46,B+2:SYS40000:NEXT
1017 POKEV+39,1:POKE54273,40:POKE54276,129:POKE54283,129:SYS40187:IFLV=0THEN3000
1018 POKE53281,6:FORI=15TO0STEP-.2:POKE54296,I:NEXT:POKEV+47,1
1020 PRINT"[HOME][DOWN][DOWN][DOWN][DOWN] [RVSON][BLA
CK] ="LV:POKE53281,6
1030 GOTO770
2000 POKEV+21,131:POKE54276,33:POKE54283,33: IFM<128THEN1010
2020 GB=GB+1: IFGB=3THENL=L+1: SC=SC+EX: EX=EX+200:GB=0: IFL=6THENP=1
2021 SC=SC+INT(RND(0)*60)+15+(L*5)+(LV*10)+(GB*10)
2025 IFP=1THEN4000
2026 POKE54296,15
2030 IFGB=1THEND=8:FORI=130TO33STEP-11:POKE54273,I:POKE54280,I-10:NEXT:GOTO2045
2040 IFGB=2THEND=10:FORI=130TO33STEP-11:POKE54273,I:POKE54280,I-10:NEXT:GOTO2045
2041 FORT=1TO3:FORI=99TO255STEP10:POKE54273,I:POKE54280,I-30:NEXT
2042 NEXT
2045 PRINT"[HOME][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN][DOWN]
[RVSON][BLACK] "SC:POKE54296,0

```



REVIEW SOFTWARE



**Desert Burner**

This is a new release on the 'Sparklers' range of budget software, and quite a good one too.

The game places you on a souped-up motorcycle as you race across a desert highway in an attempt to deliver some top secret plans. The highway, however, is far from deserted; there are helicopters and plenty of oncoming traffic to avoid. But your bike is equal to the task; armed with cannons and able to jump over obstacles. You must shoot down the helicopters, whilst at the same time avoiding their bombs and leaping the obstacles in the road.

Ok, so it's not the most original of games, but it is quite nicely done and difficult enough to keep you at it for a while, I should think. The graphics are reasonably good, and the scrolling highway is quite smooth, although there are quite a few attribute problems. There are two different highways you can play on, and a nice feature of the game is a practice mode which enables you to play the game with the collision detection on the road obstacles turned off.

One small criticism — the grammar in the notes and instructions is pretty poor, and sets a bad example for the children that the game is presumably aimed at.

I'm not sure that this game is one that will hold your attention for months and months, but it is still good value and as good as some more expensive games I've seen. **C.J.**

**Price:** £2.50  
**Publisher:** Creative Sparks  
**Address:** Thomson House, 296 Farnborough Rd, Farnborough, Hants



**Frank Bruno's Boxing**

It could be argued that this is a simulation rather than a game, because all the movements made by a boxer can be controlled from your Spectrum, and what you see on the cover in terms of a 3-D ring etc. is actually what you get. Your task is to pilot Frank Bruno through eight bouts against increasingly mean opponents.

The graphics are not hi-res in the Ultimate sense, but are good enough to show the contents clearly; movement is swift and smooth. The boxers are shown from the waist up, and your viewpoint is over Frank's muscular shoulders. From here you can duck, weave left and right with guard up or down, and deliver left, right, uppercut and knockout punches.

Control is via six keys or, the insert implies, a joystick, but on wrestling with this for half an hour, I discovered that the joystick merely supplements the keyboard by controlling movement, whilst you punch the keys. Clearer instructions please!

The first opponent is the Canadian Crusher who is supposed to be slow and lumbering, but a further 30 minutes' play still left me defeated. When you beat him you are given a code which allows you to load the code for the next boxer. Sadly, the review copy wouldn't let me cheat, so I can't tell you about Ravioli Mafiosi and all the rest of the gang.

Challenging, well presented, and on this assessment, should keep you busy for a long time. Tricky and addictive. **D.M.**

**Price:** £6.95  
**Publisher:** Elite  
**Address:** Anchor Hse, Anchor Rd, Aldridge, W Midlands



**Hard Hat Mack**

Hard Hat Mack has been converted for the CPC464 from a good selling program which made a great name for itself — Stateside. However, Stateside probably obeyed the controls properly, as it is, this version is actually impossible to play, because the controls just do not do what they should.

Hard Hat Mack is yet another game involving lifts and girders, although at least the scenario is fairly realistic. The action takes place on a construction site and the simple stated aim is to complete the building on each of the three separate stages, and at a multitude of different difficulty levels. All I have actually been able to do so far is to watch the demo screens, and very bright and colourful they are too.

There are, naturally, very tricky hazards at large. These include a group of vandals, and a character called Osha, who rushes around with a clipboard, while the Mack leaps around rather idiotically, with the controls failing to function. For a start, nothing works unless SHIFT is pressed, which makes Mack jump in whichever way he is facing. Up and down movement does not work either, the only key which does work being the DELETE to pause play. Sadly, the ESC key which should restart merely wipes out the current game.

No, if Ariolasoft cannot check such elementary things as controls, they are going to have problems. Some of us have broken joysticks, and have to fumble with the keyboard and even so, the little I have seen wouldn't make me go back for any more! **P.T.**

**Price:** £8.95  
**Publisher:** Ariolasoft  
**Address:** Suite 105/6 Asphalte Hse, Palace St, London SW1E 5HS





### Operation Caretaker

Ok, ok, I take it all back. In a recent HCW I laid quite heavily into this kit, which is intended as a sort of cassette player maintenance kit.

Hold on though, on second thoughts, I'm only prepared to take back some of the things I said about it. Granted, some of my criticisms about the instructions and friendliness of the package weren't entirely justified. On the other hand though, my criticism of the program which tests your cassette player's azimuth alignment was justified.

At the time, the alignment program insisted that my trusty and reliable cassette player (which has never given me the slightest loading problems) was a bit of a wreck and thoroughly unreliable.

It seems that Global Software have accepted that criticism at least, for they have now supplied us with a newer version, slightly modified and considerably more accurate, as far as I can tell.

The demagnetising/head cleaning tape is a sensible inclusion, as is the screwdriver for adjusting the head on the cassette player. But now, the alignment program, instead of registering vast inaccuracies in the way my cassette reads data and giving it an "Ugly" rating, gives a very low error rate and a "Good" rating. This seems more accurate judging by my past experience with the player, and I now feel that the kit is more useful than before. It might seem like an unnecessary expense if you don't have loading problems at the moment, but in the long run it could be a very worthwhile investment. **C.J.**

Price: £9.95

Publisher: Global Software

Address: PO Box 67, London SW11



### St Crippens

Despite its novel setting, this is really a fairly dated type of maze game. Set in a hospital, you are a patient looking for your clothes so that you can leave the hospital. But between you and freedom are the nurses, porters and a few monsters thrown in for good measure (and look out for the bedpans and polished floors too!).

To find the clothes you must make your way through all the wards whilst the hospital staff chase you around the beds. It's all fairly standard stuff, although the hospital setting is rather novel and makes the game seem a bit more original than it really is. The graphics are fairly basic — all the animated figures look like stick insects and appear to be made up of just one or two UDGs. The collision detection is a bit suspect as you can be injured (you don't lose lives, just sustain injuries) at times when it actually looks as though you and your pursuer haven't quite come into contact. Even so, I still found the game enjoyable for a short while, and it was only the fact that I couldn't seem to find any clothes anywhere that caused me to get a bit fed up.

It's a pity that the graphics are so uninspired, since with better graphics and slightly more responsive controls, it would make a decent enough budget game. **C.J.**

Price: £2.50

Publisher: Creative Sparks

Address: Thomson Hse, 296 Farnborough Road, Farnborough, Hants



### Jump Jet

Software houses are always searching for new versions of existing themes. With "Jump Jet" Anirog have taken the ever popular flight simulator program and altered the scenario to that of an aircraft carrier.

As the game begins you select the skill level you wish to play at from the five levels rated Practice to Group Captain. The skill level affects the weather conditions — the flight lieutenant has no wind or waves to help him; the group captain has mountainous seas and stormy conditions.

The screen is used to give a split display, the bottom half always shows the instrument panel, the view illustrated on the upper half varies with increasing height. Upon take off there is a birds-eye view of the jet gaining height. Above 50ft the view changes to head-on and sideways silhouettes of the carrier and jet. Finally as you climb above 200ft the view is of sky and sea complete with waves and clouds.

The graphics are nothing spectacular. When being attacked by an enemy fighter your only indication of impending doom is a white circle which appears on the front of the enemy plane, this slowly grows in size. Having grown to a certain size the screen goes blank and there is a bang, a message on the screen then informs you of your termination.

The program also claims to make use of Amstrad compatible speech synthesisers, the only mumbblings that I detected were completely un-decipherable.

Jump Jet would have probably have been classed as a good program when the Amstrad was first released. However, today's Amstrad software is of a much higher standard, consequently Jump Jet is decidedly average. **J.R.**

Price: £9.95

Publisher: Anirog

Address: 29 West Hill, Dartford, Kent DA1 2EL



### Flipped



### Hooked



### Keen



### Yawning



### Comatose



**Richard Adam's Towel**

Now this is what I call software!

Packed in a wonderful soft case — this product is the last word in interactive programs. You can do so many things with this unit.

Imagine flying in a Vagon spaceship without this pack. It has full colour display in either blue or mulberry, a colour not found on too many computers nowadays. What is so clever is that the media can be turned over and the readout, colours too for that matter, are reversed so that it can be read in a mirror whilst still in use.

The storage capacity of this product is unsurpassed too. I have no other piece of software that can hold as much liquid as this without showing tell tale read/write degradation, and drips. As this is a read only product I can assure you that it can be read without error, whether wet or dry.

Other companies advertise summer games products but none can compare with this one. It is extra special because you don't even need a computer to use it. It's use is enhanced by being close to a machine but this reduces the unit to a simple warmth producer, the tactile and visual qualities tend to be masked.

Another real difficulty is finding hardware that can interface to this product. It is rather too large to fit into the average cassette recorder and rather too floppy to fit a disc drive, there are no holes either. I expect this to be overcome soon, if the micro-computer industry can develop a unit that reads ice-cream wafers, the waferdrive, why not towels? **R.S.**

**Price:** £15.95

**Publisher:** H H Towels

**Address:** 36-38 Hanway Street, London W1P 9DE

**Machine:** None



**Mordon's Quest**

I'm almost embarrassed to review this adventure as I haven't been able to make much of a dent in it at all — despite spending most of the weekend playing it. Even so, Mordon's Quest proved addictive enough for me to persevere with it, whereas I would have abandoned many other adventures in frustration by now.

A sequel, of sorts, to the earlier Classic Adventure (published in a number of versions by Melbourne House and others) this game begins with you waking in a familiar bedroom — a location carried over from the earlier adventure. From here, you must find your way into the presence of Mordon, The Ancient One. The trouble is, that I haven't reached that far yet. In fact, to tell the truth I'm still wandering around a mist-shrouded landscape, hopelessly lost of course, but enjoying every minute of it.

Where this adventure is so successful is that it presents you with some really trying problems. However, rather than simply being frustrating, the game always makes you feel that the solution you're looking for is just around the corner.

This is a text only adventure, but I didn't miss the graphics at all. The prose is fairly evocative and it's not the sort of game that allows you to run quickly from one locations to the next, so graphics aren't really necessary. Old fashioned maybe, but vintage stuff nonetheless. **C.J.**

**Price:** £6.95

**Publisher:** Melbourne House

**Address:** Castle Yard House, Castle Yd, Richmond, London

**SPECTRUM**



**Catastrophes**

A simple game, or so it seems. You have sole charge of the company helicopter and all you have to do is lift building bricks from supply barges in the middle of the North Sea and use them to construct a building. But beware of the hazards awaiting you!

Low-flying aeroplanes frequently appear intent on crashing into your helicopter, and nature is determined to stop you. Hurricanes, electric storms, earthquakes and floods all appear with startling regularity to undo your good work. It would be a wonder if they ever managed to find any North Sea oil, let alone get it ashore, if the real world was like this.

The graphics are excellent. Day changes into night. Jagged lightning snakes down the screen before damaging your carefully constructed building. The sound effects are good and add to the atmosphere.

The program starts by letting you choose the level — amateur or professional, and setting your daily target. The professional level has higher targets but runs faster. On the screen there are two mini-buildings and two helicopters. The one on the left runs in demo mode while you can use either cursor keys or preferably joystick to operate the helicopter on the right. Your score depends on how many bricks you use. There are various bonuses, and you lose score for every brick lost due to the catastrophes that befall you.

Sadly it proved rather predictable after a while. I found myself trying to destroy the aeroplanes by bombing them with bricks rather than bother to construct buildings to be inevitably blown down. Which is all rather a pity because, as I said, the graphics are very good. **A.W.**

**Price:** £8.95

**Publisher:** Amsoft

**Address:** 169 Kings Rd, Brentwood, Essex CM14 4EF

**AMSTRAD**



**Alex Higgins' World Pool**

Anyone familiar with CDS' Steve Davis Snooker will immediately feel at home with this program. It has been carefully designed to conform as far as possible to the rules of the English Pool Association, and having spent some time playing the real thing — signs of a mis-spent youth — I can verify this.

For the uninitiated, eight ball pool has 15 balls; seven spotted, seven striped, and a black. To start a game each player takes a go until one of them pockets a ball. If a striped ball is pocketed then that player has to eliminate the rest of the striped balls, and his opponent has to tackle the spotted balls. The game is finished by pocketing the black. If the black goes down at any other time you lose the game. Easy isn't it!

To start a game you have to place the white cue ball in the desired position within the 'D' at one end of the table. A large flashing cross appears on the cue ball to allow you to set the direction in which you want it to travel. You must then select the force you wish to exert, and the amount of spin — left, right, top or bottom. If this all sounds tedious then I assure you it isn't; it takes much longer to describe than to do! Then, with a little luck and a lot of judgement, one of the balls is speedily despatched into a pocket.

With an option to use two joysticks, and Amstrad speech synthesiser compatible, this is an excellent program guaranteeing hours of enjoyment. **A.W.**

**Price:** £8.95

**Publisher:** Amsoft

**Address:** 169, Kings Rd, Brentwood, Essex CM14 4EF

**AMSTRAD**







**Mr Smarty —  
Mental Arithmetic**

This program contains four sections relating to the basic rules of number work — addition, subtraction, multiplication and division.

At the beginning a menu asks you to choose which arithmetic rule you want to use. After this you are asked to select the difficulty level. The player has then to answer a number of questions. A correct answer is rewarded. The rewards comprise of four animated pictures showing the antics of a little stick man. On one screen he climbs a ladder up a diving tower and leaps into a bucket of water. In another, he swings on a rope. Neither the graphics nor sound were outstanding.

This type of program is simple to write and just as easy to fail at. There are numerous, arithmetic programs on the market and this one doesn't offer anything new. Also, no attempt was made to detect duplication of questions.

Unless you're using the sledgehammer approach to teach arithmetic, answering the same question a number of times soon became pointless. The degree of difficulty does not vary during any given level. A simple routine to increase or decrease difficulty depending on the user's performance would have been valuable.

To sum up, this program is not one I would recommend. There is nothing in it which would not be covered in school and the graphics are not a sufficient gimmick to hold a child's attention. **M.W.**

**Price:** £4.99

**Publisher:** Softschool

**Address:** 471 Homey Road, London N19

**SPECTRUM**



**Abu Simbel**

This is almost an above average platform game. Unfortunately I found it so difficult to play, and so frustrating that I very quickly lost all patience with it and, despite trying to persevere and give the game a fair trial, I eventually gave in and found myself pulling out the power plug.

Set in an Egyptian pyramid, the game requires you to rescue someone by the name of Johnny, and there's some sort of treasure hunt involved along the way too. The graphics are above average for a JSW clone — quite large and detailed — though I'm not sure what the figure that you control was meant to be. It looks just like a blob on legs, and with a silly grin.

But what I found so irritating was the difficulty of getting through the rooms, past the various obstacles. The routes available require such precise timing, and your margin for error is so slight, that getting through a room just becomes a matter of repetitively attempting each obstacle until you've got the timing exact to a fraction of a second.

I realise that half the fun of a platform game is working out how to get through the rooms, but I simply found this game too difficult. After spending quarter of an hour on one single obstacle, only to eventually succeed and discover that the very next obstacle was just as hard, I gave up out of frustration. **C.J.**

**Price:** £7.95

**Publisher:** Gremlin Graphics

**Address:** Alpha Hse, 10 Carver St, Sheffield S14FS

**SPECTRUM**



**On-Court Tennis**

With Wimbledon fresh in people's minds, what better time to release On-Court Tennis. And since sports simulations are all the rage at the moment, this should go down well.

There are plenty of variations built into the game. You can play on grass, hard or clay courts. Then there are four styles of play represented by John Ringler, Bjorn Urgin, Jimmy Orr and Ivan Messier. Each has his own particular strengths — Ivan has a great service, John's best shot is his backhand, and so on. You pick two of these four, either for a two player or player versus computer game, of one, three or five sets.

However good a server you have picked, it's still up to you and the joystick if it goes in. The ball is tossed automatically and moving the joystick triggers the swing. The direction you move it decides which direction it goes, and holding the fire button down adds power to the shot. That I found easy, but the rally is a much more complicated affair.

The player automatically runs towards the ball and moving the joystick triggers the swing. But this time, the direction decides the type of shot, a top-spin, slice, lob or ordinary shot. Fire gives a drop-shot. This takes a lot of practice, and bears even less relationship to tennis, than wiggling a joystick from side to side does to running.

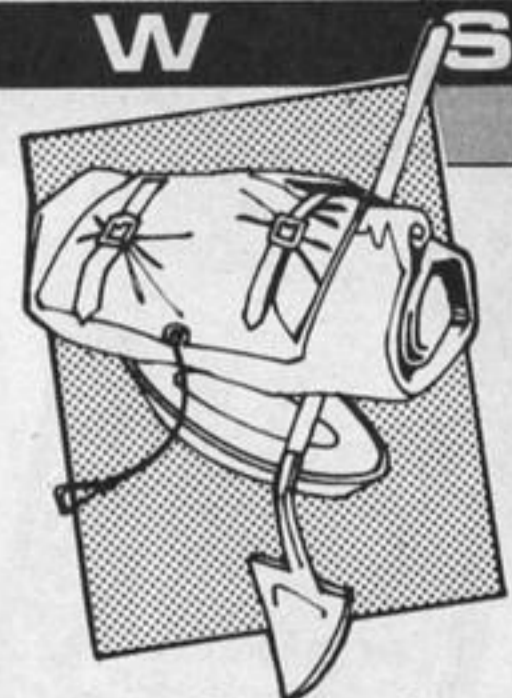
The graphics are excellent, there's a nice musical interlude between games and the accompanying instructions are detailed. Nevertheless, although I was impressed, I was far from addicted. **B.J.**

**Price:** £10.99

**Publisher:** Activision

**Address:** 15 Harley Hse, Marylebone Rd, London NW1

**C64**



**Boulder Dash**

At last MSX owners have a chance to play this classic game, which has been available for a selection of other machines for some time now. The conversion is good, with attractive graphics and sound effects. My only small complaint is that you really need a colour television, as in some screens the boulders do not stand out clearly in black and white.

In case you didn't already know, the game involves controlling a little man called Rockford who tunnels through caves collecting jewels and avoiding falling boulders. You have to collect a certain number of jewels in each cave before you can move on to the next. There are lots of different caves and levels of difficulty, and you can choose where to start, within certain limits.

Movement is by joystick (the best option) or cursor keys. It is generally smooth, but every now and again the action seems to freeze for a few seconds. This can be rather disconcerting, particularly if it happens when you are directly underneath a boulder!

Success depends partly on speed and accuracy, and partly on careful planning, as with all the best games. In some caves there are deadly fireflies to be avoided, or butterflies which can kill you, but can also be transformed into a pile of jewels with a well-aimed boulder. There are also amoebas, which are less dangerous but can be rather inconvenient if you let them grow too much.

Please, Orpheus, can we have a conversion of the sequel too? **M.N.**

**Price:** £6.95

**Publisher:** Orpheus

**Address:** Unit 1, The Smithy, Church Farm, Hatley St George Nr Sandy, Beds

**MSX**





**Graphic Designer**

Many MSX computer/television combinations, including mine, suffer from a slight flaw: the extreme left-hand edge of the screen is not visible. Allowances are made for this in most commercial software, but not, regrettably, in this particular program. The menu of options is displayed at the left of the screen, and I was only able to see half of it. With only half a menu the program is not much use, so be warned, and do not buy it unless you can see the whole screen on your television.

The program is written mainly in BASIC, but uses some machine code routines. It is not break-proofed, so you can list it and edit it if required. You are given the line numbers of the picture save-and-load routines, so that they can easily be altered to use a disc instead of cassette, and the instructions also tell you where you can insert a screen dump routine if you can manage to write one.

Two separate versions of the program are supplied, the second one being for those lucky people who have Sanyo light pens. Both offer the same facilities: drawing lines, boxes, circles, ellipses and triangles, duplicating a drawing on a different area of the screen, producing pictures with up-down and/or left-right symmetry, changing the colours of all or part of the picture, adding text and so on.

The parts that I could manage to test all worked well enough, but I didn't see anything to justify the hefty price-tag. **M.N.**

**Price:** £14.95

**Publisher:** The Electric Studio

**Address:** PO Box 96, Luton LU3 2JP

**MSX**



**Hotch Potch**

One of the "Mister Tronic" collection of supposedly educational games, this one is a variation on the sliding sections puzzle. After a very lengthy loading process, a menu offers a wide selection of pictures. There's a map of Britain, moon rocket, spider's web, digital watch, racing car, and several more.

Once a selection has been made, mixing takes place at a key-press. This involves division into three vertical and horizontal sections which then scroll very smoothly down and across, respectively, leaving you with a real tangle to sort out.

On screen instructions then tell you which keys to press to achieve similar scrolling, but it's up to you to fathom out which one to scroll where! If you can do it in less than 30 moves you join the hi-scorers. For me this sort of thing has always been difficult, and I haven't improved any!

No joysticks are catered for, in fact, the program crashed with mine just connected, but keyboard control is straightforward and unlikely to scar your machine. The quality of the graphics varies from sound but uninspiring to rather fine.

I can't honestly say that I would regard this as any more educational than the original puzzle, but it could be argued to have some benefit in terms of abstract learning and short term recall. Even so I feel it's very hard for children. However it is fun and cheap and the game concept does come from a popular smash-hit of the moment. **D.M.**

**Price:** £1.99

**Publisher:** Mastertronic

**Address:** Park Lorne, 111 Park Rd, London NW8 7JL

**SPECTRUM**



**Poker**

In this simulation you chance your life playing poker in a western saloon against six of the meanest players in town. You start with a \$1000 stake and it's up to you to win or lose. The rules are straight forward and well-explained at the start of play.

The game is normal draw poker in that you are dealt five cards. You must assess these cards and a preliminary round of betting continues until all players have called — ie they've reached an agreed betting level. You may then exchange up to three cards. The game then continues with the normal second betting round until the winner is found. You must decide whether to bluff it out or fold.

There is an eighth figure involved. Moll, the barmaid is there to offer advice if you feel the need. Whether the advice is a help or a hindrance is debatable. The computer will also assist you to sort your cards and choose those to be changed, should you wish to.

The graphics are quite simple as they are restricted to representations of the cards held. To add to the atmosphere suitable phrases relating to the state of play and the views of the opponents are displayed. The game runs at an irritatingly slow speed and the option to speed things up didn't have much effect.

Overall a good, but not outstanding, poker simulation which plays a good game but unfortunately isn't very exciting. **M.W.**

**Price:** £5.95

**Publisher:** Duckworth

**Address:** Old Piano Factory, 43 Gloucester Crescent, London NW1 7DY

**SPECTRUM**



**The Hobbit (Disc Version)**

When the Hobbit was first released for the Sinclair Spectrum one of its selling points was its graphics. When it was squeezed into the BBC the graphics were lost due to insufficient memory. This has now been remedied with the arrival of the disc version for the BBC computer.

The Hobbit is recorded on both sides of the floppy disc supplied. A double-sided disc drive is not required to read the disc as the disc is a reversible one. Side two is accessed by removing the disc and turning it over before re-inserting it. Before you can play the game with pictures you must prepare your own picture discs. If you have 40 track drives then you will require two picture discs. If you wish to save your position then you must also prepare a save game disc. By now the game is becoming pretty heavy on disc usage!

The game can be played with or without pictures. Each time you visit a new location the drive whirrs away and a new picture is loaded. Pressing the space bar toggles between the picture and its accompanying text. This constant accessing of the disc becomes pretty tedious as the pictures are not all that good. Even when playing a text only game the program still accesses the disc. This has been used to provide more detailed descriptions of the places visited.

If you already have the tape based version of the game then I wouldn't bother rushing out to buy this one. **J.R.**

**Price:** £17.95

**Publisher:** Melbourne House

**Address:** Castle Yard House, Castle Yd, Richmond, TW10 6TF

**BBC**





**Music Master**

After the rather exciting Music Master of the 64, it isn't surprising to see an implementation for the C16. At first thoughts, however, one wouldn't expect too much, bearing in mind that only two rudimentary voices are available. In fact, the programmer has only done a bit of work and improved on the basic machine.

The concept is essentially the same as for the C64 version. With this program you can program two part music and replay it. In other words, this program is a sequencer. The mode of entry is such that the tune is prepared by "playing" the keyboard. The duration of each note will therefore depend on how long you press a key. It is possible to edit the score by using word processor type commands to copy, delete and transpose notes.

Naturally, you are able to adjust the voices to give different sounds. This can be achieved by adjusting the attack, decay and sustain of the voices. Using this software feature a variety of sounds can be obtained although the range is inevitably restricted.

One of the voices can be used to provide a backing track, and ten preset rhythms are provided for this purpose. Once you've finished your masterpiece, you can save it on tape or disc for further use at a later date.

The program is simple to use and comes with a detailed manual. Full details are given on how to incorporate your tunes in your own programs and an interrupt driven playing routine provided. **A.W.**

**Price:** £14.95

**Publisher:** Supersoft

**Address:** Winchester Hse, Canning Rd, Wealdstone, Harrow, Middx HA3 7SJ

**C16**



**Perfect Writer**

Apart from a slow trickle of games, which is only just becoming significant, the C16 has received little attention from the software houses. Due to the rather limited memory, the lack of serious software is particularly evident.

This program is from Supersoft who are now offering more serious possibilities. The first noticeable feature of the program is that it's only just over 4K in size. Bearing this in mind, it's a remarkably versatile work processor.

In common with most word processors on Commodore machines, this product overcomes the limitations of 40 columns by using horizontal scrolling. The width of document is definable and the maximum document length is about two pages of A4. The normal editing commands are available allowing the insertion and deletion of text, the movement and copying of text blocks and the searching of text for a specified string.

Most options are available from an edit mode. One can toggle between the editing and control mode by simple use of the CTRL key. The basic formatting options of centring and left justification are implemented along with the ability to reformat blocks of text. There are also a range of commands for the selection of display colours and the manipulation of the workspace and text blocks. Considering its size, this is quite a versatile product.

This is an easy to use, flexible no frills product which, despite the RAM limitations in the C16, is a viable means of handling text. Great value for money. **A.W.**

**Price:** £14.95

**Publisher:** Supersoft

**Address:** Winchester Hse, Canning Rd, Wealdstone, Harrow, Middx HR3 7SJ

**C16**



**Amsprite**

This clever piece of work is a means whereby you can design your own multi-coloured shapes (sprites) in a sequence for animation purposes, store them in memory, save them to tape, then use them in a program of your own. With Amsprite, you harness the power and speed of machine code without having to understand it.

In this two tape package, you get a sample BASIC program showing how to build in the use of the sprites, and the creator program. The former is good, and your sprite is initialised by using data statements with 10 clearly explained parameters, reminiscent of the SOUND command. The resulting movement is quite fair. It certainly is as good as some early published games, though in moving across the screen the sprites also seem to move up and down, with some hesitation and a hint of flicker.

The sprite creator (editor) is easy to use with a number of single letter commands to allow you to choose a grid size on which to work, choose pens and inks, draw pixels (all in mode 0), view your image in different ways, store it in memory, and animate it etc. I found it friendly to use.

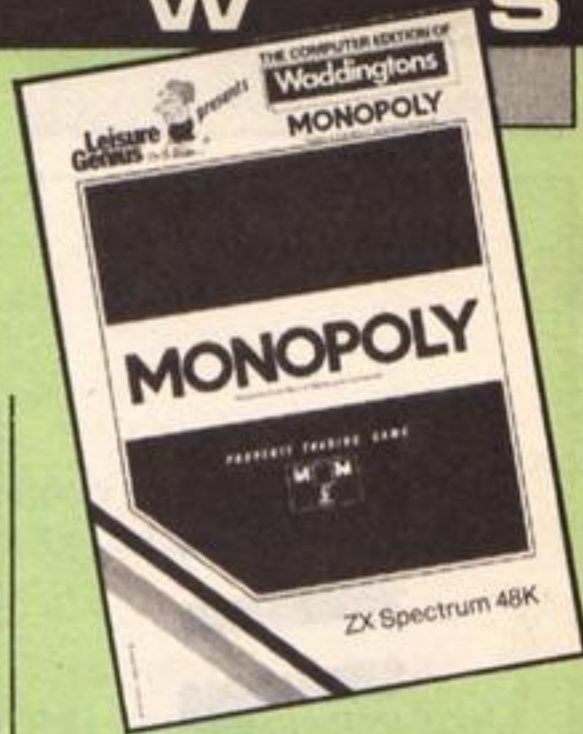
Criticism? The manual, though clear, is terse. The programs overwrite the disc RAM thus crashing it, and have the odd spelling error. You have only about 16K left for program. The cassette labels contradict the manual, and the game is pricey. Satisfactory, but not outstanding. **D.M.**

**Price:** £14.95

**Publisher:** The Electric Studio

**Address:** PO Box 96, Luton, LU3 2JP

**AMSTRAD**



**Monopoly**

In the tradition of transposing well known board games such as Cluedo and Scrabble to the computer, there is now an authorised version of Monopoly. It has the usual features of wheeler-dealing for prime properties, rental payments for landing on an opponent's property, mortgages, auctions, hotel building etc.

The screen is divided between a perspective view of the board with the pieces moving around it and a window showing a detailed view of the square you are on. This second window relates to the player whose turn it is and scrolls as the piece is moved the relevant number of squares. Should the square you land on be up for sale, you have the option to buy. If you decline to buy, an auction is held until one of the other players buys the property.

The usual six pieces are available for players and any combination of human or computer players are available. Unlike the board game, you cannot actually hold your own property cards and therefore you need a good memory to recall who owns what. You can recall facts such as assets, credit, owner's list by pressing the relevant key, but this option is only available during your turn.

Overall this is an excellent simulation of a very good board game and is vastly superior to the other non-authorised versions. The graphics are very realistic with nice rolling of the dice and scrolling of the Chance and Community Chest cards. Well worth a serious look. **M.W.**

**Price:** £9.95

**Publisher:** Leisure Genius

**Address:** 3 Montagu Row, London W1E 1EZ

**SPECTRUM**



# ROBOT RONNIE



Ronnie the robot's job is to collect anti-matter leaks from the levels and ladders, whilst avoiding the patrolling Nurks. He must collect all the leaks before the time limit runs out. On each new level, there are more leaks to collect, and the time limit is not so long.

**Keys**  
 Z left  
 X right  
 : up  
 / down

**Variables**  
 S% score  
 L% level  
 LI% lives  
 G% anti-matter collected  
 B% time limit  
 D% is Ronnie dead?  
 X%,Y% Ronnie's coordinates  
 MX%,MY% Ronnie's last co-ordinates  
 M% did Ronnie move?  
 N% Ronnie's leg setting  
 NX%,NY% Nurks' coordinates  
 KX% Nurks' last x coordinate  
 H%(5) high scores array  
 NS(5) high scorers' names array  
 NS Nurk  
 RS,SS Ronnie  
 PS anti-matter  
 P start of music data

**How it works**  
 70-120 initialisation  
 130-120 main loop  
 220-330 Ronnie procedure  
 340-430 Nurks procedure  
 440-650 draw screen procedure  
 660-780 initialisation procedure  
 790-820 new level procedure  
 830-920 dead procedure  
 930-950 end of game  
 960-1220 high scores procedure  
 1230-1340 interrupt driven music procedure

```

10 REM *****
20 REM * Robot Ronnie *
30 REM * By Stephen Gray *
40 REM * BBC Model B *
50 REM * Grayface *
60 REM *****
70 @%=6
80 MODE7:PROCInit:PROCHigh:PROCMusic
90 S%=0:L%=1:LI%=3
100 MODE2:PROCScreen
110 *FX14,4
120 TIME=0
130 PROCRonnie
140 PROCNurks
150 IF G%=L%*2 PROCLevel:GOTO 100
160 VDU4:PRINTTAB(6,1);:IF B%-TIME DIV100<10 PRINT"0";
170 PRINT:B%-TIME DIV100:VDU5
    
```



**Anti-matter, the stuff your mother always warned you to avoid, threatens to smatter Robot Ronnie on his rounds of the levels and ladders in HCW regular Stephen Gray's new BBC game**



```

180 IF TIME DIV100>=B% VDU4:COLOUR15:PRINTTAB(6,1);"00":D%=1
190 IF D% PROCDead:IF LI% GOTO 100
200 IF D% GOTO 930
210 GOTO 130
220 DEF PROCRonnie
230 MX%=X%:MY%=Y%:M%=0
240 IF INKEY(-98) AND POINT(X%+32,Y%-64)=4 X%=X%-64:M%=1:IF X%<0 X%=1216
250 IF INKEY(-67) AND POINT(X%+32,Y%-64)=4 X%=X%+64:M%=1:IF X%>1216 X%=0
260 IF INKEY(-73) AND POINT(X%+8,Y%+32)=6 M%=1:Y%=Y%+32
270 IF INKEY(-105) AND POINT(X%+8,Y%-64)=6 M%=1:Y%=Y%-32
280 IF M%=0 ENDPROC
290 IF POINT(X%+8,Y%-36)>8 SOUND 3,3,73,1:MOVE X%,Y%-32:PRINTP$:VDU4:S%=S%+10:
G%=G%+1:PRINTTAB(0,1);S%:VDU5
300 IF N%=1 N%=2 ELSE N%=1
310 MOVE MX%,MY%:IF N%=1 PRINT S$ ELSE PRINT R$
320 MOVE X%,Y%:IF N%=2 PRINT S$ ELSE PRINT R$
330 ENDPROC
340 DEF PROCNurks
350 KX%=NX%
360 NX%=NX%+64:IF NX%>1216 NX%=0
370 FOR NY%=128 TO 768 STEP320
380 IF KX%=X% AND (NY%=Y% OR NY%=Y%-32) D%=1:NEXT
390 MOVE KX%,NY%:PRINTN$
400 MOVE NX%,NY%:PRINTN$
410 IF NX%=X% AND (NY%=Y% OR NY%=Y%-32) D%=1
420 NEXT
430 ENDPROC
440 DEF PROCScreen
450 FOR A=1 TO 15:VDU 19,A,0;0;:NEXT
460 VDU 23;8202;0;0;0;
470 VDU5
480 MOVE 1100,1023:PRINTSTRING$(LI%-1,R$)
490 GCOL 0,4
500 FOR Y=64 TO 704 STEP160
510 MOVE 0,Y
520 PRINT STRING$(20,CHR$255)
530 NEXT
540 GCOL 0,6
550 FOR X=192 TO 960 STEP 256
560 FOR Y=96 TO 768 STEP32
570 MOVE X,Y:VDU254:NEXT,
580 FOR A=1 TO L%*2
590 A%=RND(16)*64+128:B%=RND(5)*160-64:IF POINT(A%+8,B%) OR POINT(A%,B%) GOTO
590
600 MOVE A%,B%:PRINTP$:NEXT
610 X%=0:Y%=128:MOVE X%,Y%:PRINTR$:N%=1:G%=0:B%=32-L%*2:D%=0:NX%=640:FOR NY%=1
28 TO 768 STEP320:MOVE NX%,NY%:PRINTN$:NEXT
620 VDU4:COLOUR3:PRINT"SCORE TIME LEVEL":COLOUR2:PRINT;S%;TAB(6,1);B%;TAB(11,1
);L%
630 FOR A=1 TO 15:VDU19,A,A;0;:NEXT
640 VDU5
650 ENDPROC
660 DEF PROCInit
670 DIM H%(5),N$(5):FOR A=1 TO 5:N$(A)="Grayface":H%(A)=100:NEXT:S%=0
680 VDU 23,224,60,126,66,66,126,0,60,28,23,225,44,52,56,60,24,64,196,6,23,226,
0,0,60,60,0,0,195,195,23,227,129,129,129,0,100,4,0,0,23,228,44,52,56,60,24,2,35,
96,23,229,129,129,129,0,38,32,0,0
690 VDU 23,255,255,129,255,129,255,129,255,0,23,254,66,66,66,126,66,66,66,66,2
3,251,128,68,34,16,8,68,34,1,23,252,1,34,68,8,16,34,68,129,23,253,0,24,24,102,10
2,24,24,0
700 VDU 23,230,60,126,221,221,255,129,129,126,23,231,0,0,34,0,0,84,42,0
710 N$=CHR$18+CHR$3+CHR$2+CHR$230+CHR$8+CHR$18+CHR$3+CHR$3+CHR$231
720 R$=CHR$18+CHR$3+CHR$1+CHR$224+CHR$8+CHR$10+CHR$225+CHR$8+CHR$18+CHR$3+CHR$
7+CHR$227+CHR$8+CHR$11+CHR$226
730 S$=CHR$18+CHR$3+CHR$1+CHR$224+CHR$8+CHR$10+CHR$228+CHR$8+CHR$18+CHR$3+CHR$
7+CHR$229+CHR$8+CHR$11+CHR$226
740 P$=CHR$18+CHR$3+CHR$10+CHR$251+CHR$8+CHR$18+CHR$3+CHR$9+CHR$252+CHR$8+CHR$
18+CHR$3+CHR$11+CHR$253

```

# P R O G R A M

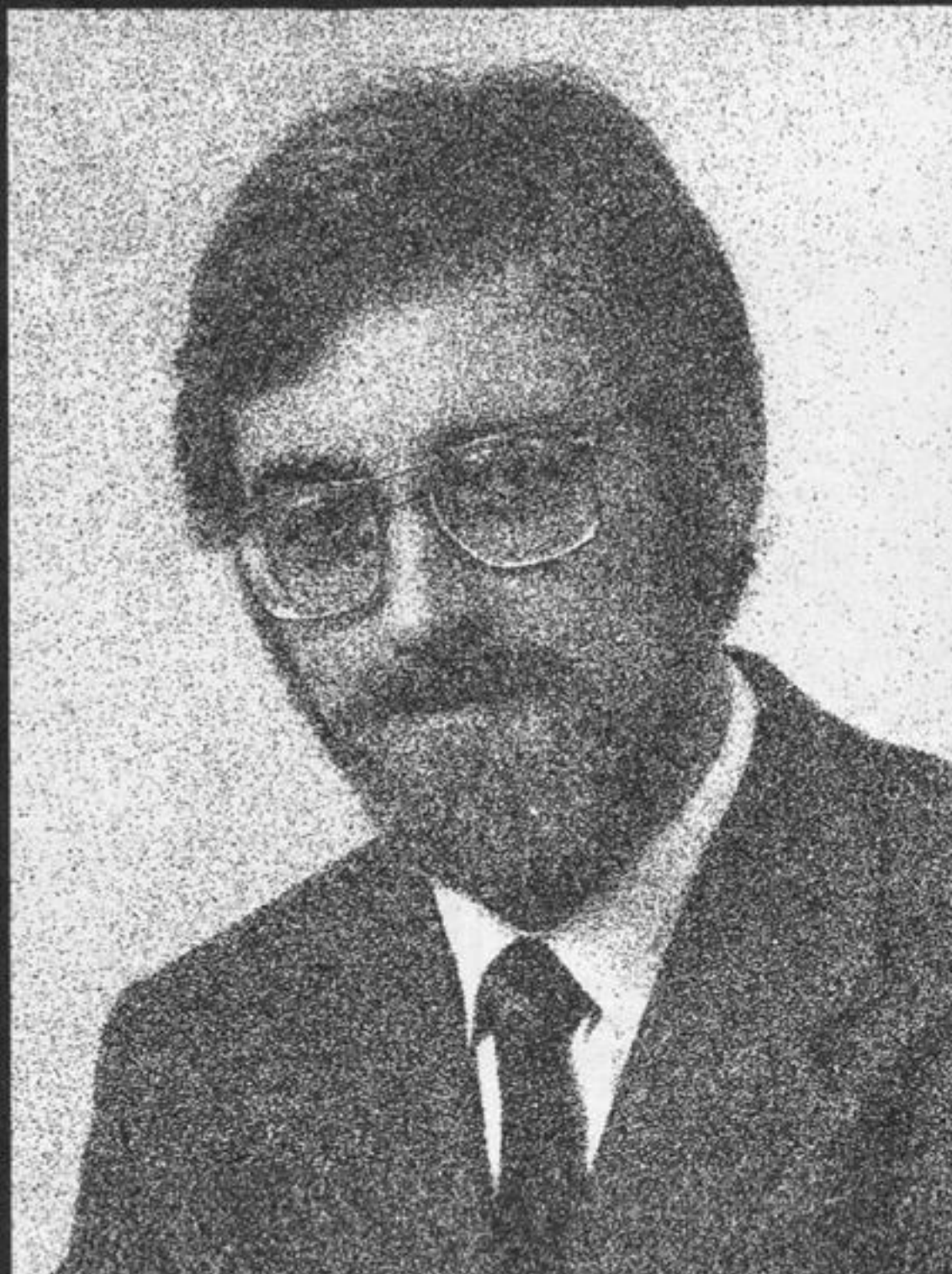
```

750 ENVELOPE 1,1,0,0,0,1,1,1,120,-1,-1,-1,120,60
760 ENVELOPE 2,1,0,0,0,1,1,1,90,-1,-1,-1,90,30
770 ENVELOPE 3,1,16,12,-28,1,1,1,120,-1,-1,-1,120,0
780 ENDPROC
790 DEF PROCLevel
800 L%=L%+1:IF L%=10 L%=1
810 FOR B=1 TO 1000:NEXT
820 ENDPROC
830 DEF PROCDead
840 LI%=LI%-1
850 *FX13,4
860 *FX15
870 ?&70=0
880 FOR B%=1 TO 4000:NEXT
890 RESTORE 900:FOR G=1 TO 7:READ F,H:SOUND 2,1,F,H:NEXT
900 DATA 33,9,25,6,33,3,37,9,33,6,25,3,33,9
910 FOR B%=1 TO 15000:NEXT
920 ENDPROC
930 MODE7
940 PROCHigh
950 GOTO 90
960 DEF PROCHigh
970 IF S%<=H%(5) GOTO 1130
980 PRINT' 'CHR$131;CHR$141;TAB(6)"YOU'RE IN THE TOP FIVE !"CHR$130;CHR$141;
TAB(6)"YOU'RE IN THE TOP FIVE !"
990 PRINT' 'CHR$133;CHR$141;TAB(8)"ENTER YOUR NAME ..."CHR$129;CHR$141;TAB(8)
"ENTER YOUR NAME ..."
1000 PRINT' 'CHR$134;TAB(6);"J ";
1010 V%=0:REPEAT V%=V%+1:UNTIL S%>H%(V%)
1020 FOR N=5 TO V%+1 STEP-1
1030 H%(N)=H%(N-1):N$(N)=N$(N-1)
1040 NEXT
1050 *FX15,1
1060 N$(V%)=""
1070 H%(V%)=S%
1080 A=GET:IF A=127 AND LENN$(V%)=0 VDU7:GOTO1080
1090 IF A=127 N$(V%)=LEFT$(N$(V%),LENN$(V%)-1):VDUA:GOTO1080
1100 IF A=13 GOTO 1130
1110 IF LENN$(V%)>19 VDU7:GOTO 1080
1120 N$(V%)=N$(V%)+CHR$(A):VDUA:GOTO 1080
1130 CLS
1140 VDU134,157:PRINT
1150 FOR A=1 TO 2:VDU134,157,141,132:PRINTTAB(5)"R O B O T   R O N N I E":NEXT
1160 VDU134,157:PRINT
1170 PRINTCHR$129;TAB(12)"by Stephen Gray"
1180 FOR A=1 TO 5:PRINT'CHR$141;A,H%(A);"   ";N$(A)'CHR$141;A,H%(A);"   ";N$(A)
:NEXT
1190 PRINT'CHR$133;TAB(8)"Press <SPACE> to start";
1200 *FX15,1
1210 A=GET:IF A<>32 THEN 1200
1220 ENDPROC
1230 DEF PROCMusic
1240 ?&220=0: ?&221=9: ?&71=0: ?&70=0: N=&70: P=&A00: Pp=&84: ?&80=1: ?&81=0: ?&82=2: ?&8
3=0: M=88
1250 FOR PASS=0 TO 2 STEP 2
1260 P%=&900
1270 [OPT PASS
1280 LDA#&80:LDX#250:LDY#&FF:JSR&FFF4:TXA:BEQ L:LDX N:LDA P,X:STA Pp:LDA P+1,X:
STA Pp+2:JMP No:.L RTS:.No LDX#&80:LDY#0:LDA#7:JSR&FFF1:INC N:INC N:LDX N:LDA N:
CMP#M:BEQ Ne:RTS:.Ne LDA#0:STA N:RTS
1290 J
1300 NEXT
1310 RESTORE 1330
1320 FOR A=0 TO 86 STEP2:READ F,H:A?P=F+20:A?(P+1)=H*1.5:NEXT
1330 DATA 33,6,33,2,5,2,21,2,33,6,33,6,53,6,49,4,41,2,33,6,21,6,25,6,33,4,25,2,
21,6,25,4,21,2,13,6,21,4,25,2,33,6,25,4,13,2,33,6,33,2,5,2,21,2,33,6,33,6,53,6,4
9,4,41,2,33,6,21,6,25,6,21,4,25,2,33,6,5,4,21,2,33,6,41,4,49,2,53,12
1340 ENDPROC

```



# TIME CAPSULE



**James Leavey was, until recently, Firebird's Mr Silver, we asked him about his selections for this week's HCW time capsule**

**T**here can be few companies that can claim to have had as much of an impact on the software scene as Firebird.

I can still recall the first ads that I read asking for programs, they featured a cassette in the form of a cheque and said that Firebird would be offering large rewards for any programs published. Programs soon started to flood in and one of the first to get his hands on them was James Leavey who has recently left Firebird to move onto another part of British Telecom — but more of that later.

James claims to be a master of many trades. He trained as a teacher, as an actor and as a journalist and has worked as a sweet maker, cleaner, book-seller, writer, doorman and backstage technician for Fiddler

on the Roof and The Sound of Music. He has sold toys at John Lewis, ads in The Observer, jewels at Asprey, books at Foyles and worked for the Royal Shakespeare and National Theatre companies. I think you could describe him as multi-faceted.

His role in Firebird started in July 1984 when he became the second person appointed to the company. He had spent over four years in BT's computing wing as part of the publicity group so the move to Firebird wasn't his first contact with micros. He even bought a home computer in 1983, a Sinclair Spectrum which was meant to keep the kids happy but ended up keeping him quiet too.

He suggests that the game which gave him most pleasure at first was "Through the Wall" on the original Spectrum starter tape and he reckons that this kept him amused for over six hours on the day he bought the machine.

James would put two of the Sinclair micros into his time capsule, the ZX81 and the Spectrum. "The ZX81 was the beginning of home computing as far as I'm concerned and with just 1K of RAM you had to be incredibly creative just to

write a game at all. It just has to be preserved."

The Spectrum also makes the grade but not the new Spectrum +. "I don't like that at all. On the original machine, although the keys were rubber, they didn't fall off. I agree that changes were required, an on/off switch and the better styling of the export version would have been nice but not the Spectrum +."

"As far as I'm concerned, Sir Clive Sinclair is the master and a genius in his own right. I imagine that he is also a "super hustler" when it comes to business. I owe all my interest in computing to him."

We then turned to consider the books that would be packed into the time capsule to protect the small machines and to enable their use. "The ZX BASIC Programming Manual, by Stephen Vickers, is a bible and written for the ordinary man. It avoids all the condescension and pomposity of the BBC manual which spoils an otherwise excellent machine."

"I have a number of favourite books, enough to fill the capsule many times over, and the simplest one is the Ladybird book, How it works — The Computer. It is no secret that a number of commercial organisations recommend this book to their staff, we certainly did in the Computer wing."

"Another good book, an idiots guide in fact, is Armada's First steps with your Spectrum by Caroline Hughes. If you want an overview of the whole area then two books from Penguin should be preserved — The Penguin Computing Book by Susan Curran and Ray Curnow and The Penguin Book of Personal Computing by Helen Graham."



"No capsule would be complete without some books of listings as they are always very useful as a guide for beginners to programming. Any book by Tim Hartnell can be recommended and I think that there are about 18 of them!"

James doesn't do anything by halves and if you think his book list was quite long wait for the list of software. If we carry on like this HCW is going to have to have a larger time capsule built just to fit all Mr Leavey's special recommendations.

The software compartment will contain several titles, all from big name software houses. "I'd want Arcadia from Imagine because it was superb programming. Imagine as a company were good and good


at Hype too but eventually became too ambitious with the megagames. Any of Ultimate's titles should go in — but especially Atic Attack — because of the overall quality and Ultimate's image. Ant Attack from Quicksilva interested me for two reasons, I like both Escher and mazes! I enjoyed Melbourne House's Hobbit advanced adventures enormously and for pure good fun I would want to include one of Mikro-Gen's Wally series. Finally I would want to include the Games Designer from Quicksilva. It is so good that anyone can make a good game simply and quickly."

From games cassettes, James turned his attention to video cassettes and some of the

# Seeing is believing

## Firebird

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television programmes that have featured computers over the last few years. I pinned him down on this one and told him that there was only room for one video so he had better choose carefully. He eventually decided on the early edition of Micro Live in which the hackers penetrated the mailbox that John Coll was trying to use. "It is an excellent magazine type programme and, without a doubt, the best presented of the complete bunch."

"What I don't understand is why Chip Shop from BBC radio was axed. It tried harder than any other programme to encourage an open attitude to computers and foster a better awareness. Barry Norman was excellent and always gave you the impression that he was personally very approachable."

We next looked at the whole range of peripherals and how James would fill that section of the capsule. "The most important peripheral for any computer owner, unless they own an Amstrad CPC464 or 664, is Masterpiece's distribution sockets. They might be old hat but they are vital to my set up. The other peripheral that should be preserved is the RS232, which isn't an interface really, it is a living creature with

a life of its own. I think that it should be the star of a TV series too."

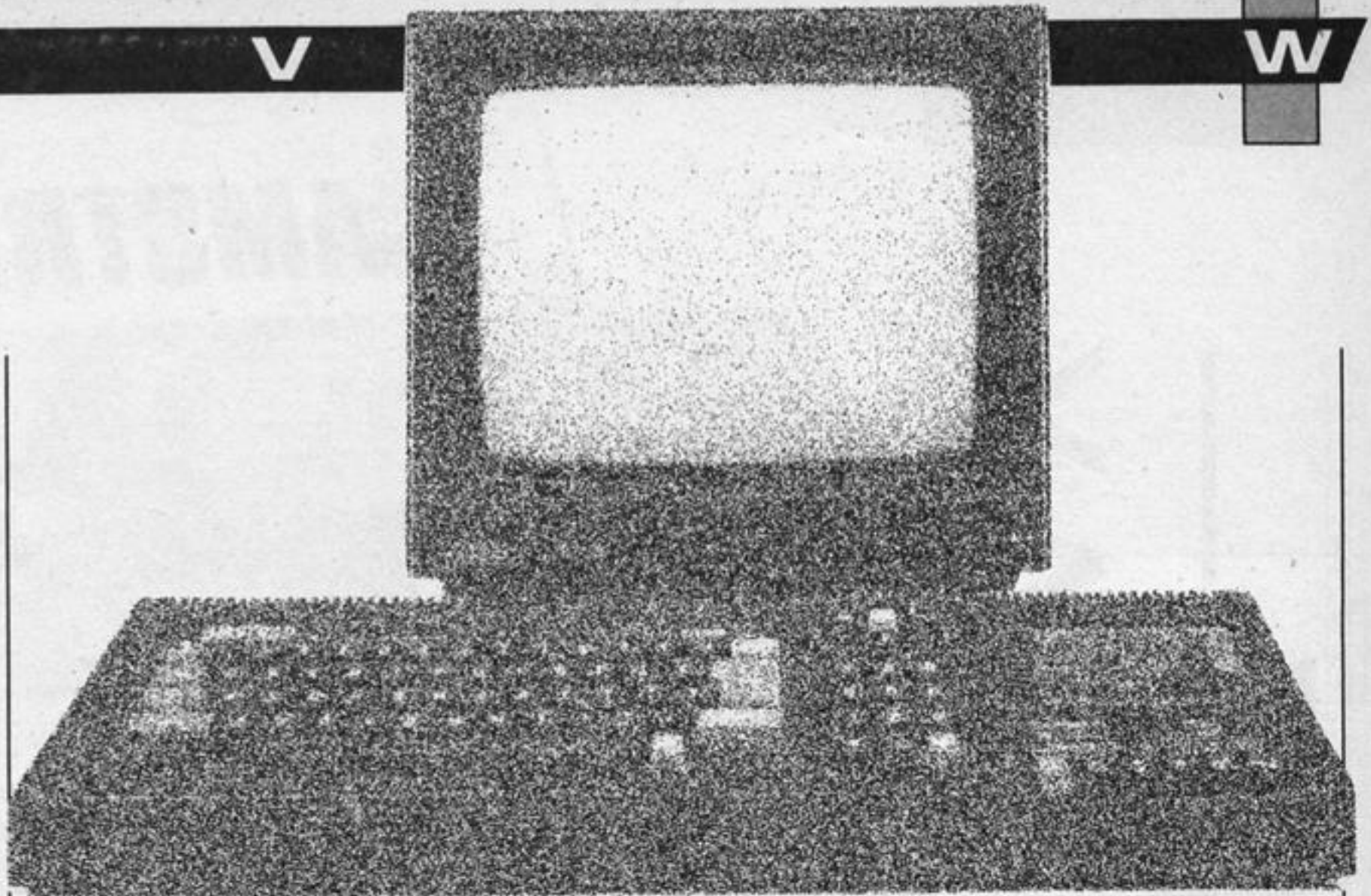
Other peripherals that James recommends are the Kempston joystick interface and his favourite Zipstick and a cheap cassette recorder. "The cheaper the better, one from Hitachi or Dixons, all this recommending of special recorders is nonsense."

We spent a few moments considering one peripheral that definitely wouldn't go into the capsule. "The Commodore 1541 disc drive is awful. I have the feeling that, if a user did a speed comparison of the same game on a turbo load cassette and on the disc, a huge number would be returned to the shops."

The last few spaces in the capsule would be taken up by the following list which James believes are needed to alleviate too much computer use: magnifying glasses — to combat all the eye strain; a Swedish chair — to help avoid back strain; Canadian Air Force exercises — to get the body working again; and two pencils and a piece of paper which, according to James, "beats all the other equipment in the time capsule hands down. All you need to use this is a good brain!"



# STICK AT IT



## David Martin has been looking at Voltmace's Delta 3sA Twin Joysticks. Did they give him joy or grief?

Voltmace is a British company manufacturing a wide range of joysticks for home computers. This is an offering for the Amstrad computers, though similar chassis are used for all Voltmace joysticks, so even if you don't own an Amstrad, read on.

The rather grandly named I/O port on the back of an Amstrad, in reality a standard 9 pin D type socket, is in fact the port for two joysticks, providing you buy two of Amstrad's own JY-2 sticks. These have an extension socket built in to enable you to connect the second stick into the first. As a result of the way it's wired, you can't even use a standard stick as the second one either, so you're stuck with spending just under £30 on the official units, which isn't too great when you consider the quality of the Amstrad sticks in comparison to the recently reviewed Kempston and Arcade joysticks, both of which feature positive action micro-switches, a real benefit. Voltmace to the rescue?

What you get for your money is a nifty adapter which plugs into the computer, but which has two flying leads incorporating standard sockets. Into these you plug the Voltmace units. You then have the facility to use the two sticks independently. One is JOY 0, the other JOY 1, which overlays certain keyboard keys. I very much hope that Voltmace makes this available as a separate item for all those of us who already own joysticks. Very neat and very clever!

The units are an unusual wedge shape in cross section, the top being flat and bearing no less than three very small fire buttons in an expanse of blank black metal. The stick itself is similarly small, almost delicate. Certainly a job for fingertip control, not ham-fisted wrenching. The base, which bears no rubber feet, is removed easily and reveals several surprising features, and the reason for the expanse of metal on the top becomes clear. The fire buttons are mounted at the top of a blanked off key pad capable of holding 14 buttons. A small printed circuit board of good quality is overlaid by a rubber membrane pad to make contacts, but the "feel" isn't great.

The biggest surprise of all, however, was at the other end, what looked like two small potentiometers, like little volume controls — though I am assured that they are in fact switches not pots — and some very complex plastic mouldings.

To function on the Amstrads, two diodes are in circuit fed from the undocumented 0.3 volts found on the CPC's I/O socket. Such an arrangement must be adjusted carefully during manufacture so that each direction registers, and one one pre-production stick, the job hadn't been done properly. It took a good 10 minutes of fiddling before I got it right. The delicate plastic mouldings used to mount the pots and translate the direction of the steel stick appear to be heat sealed into position in a very half-hearted fashion. Though on the later production jobs,

the problem seems to have been rectified.

Returning the back to its proper place, the sticks were given a work out. As a result of the lack of feet, they slide about in use a good deal; hand held, they are acceptable for an adult hand, but the rectangular shape isn't really comfortable. The stick itself is really a two finger control job, but the amount of movement is excessive, 45 degrees from vertical. As a result, although the tiny coil springs do a good job in centering, a 90 degree movement is called for to go from left to right. To be fair, the direction does register with less than five degrees, but this is rather inconsistent, and there's no "gate" to confirm the direction you've selected.

These sticks would be superb as the controller for a graphics program with the buttons on the pad programmed to change colours, switch features etc. whilst the stick would be really great for simulating a broad sweep with a brush. Given the nature of the Amstrad port, however, this is not possible.

For games on the Amstrad, though these joysticks are much better than the Quickshot II in every respect, I still prefer the ruggedness and positive feedback given by the recently reviewed Euromax Arcade with its micro switches. **D.M.**

**Price:** £12 each splitter: £4.95

**Publisher:** Voltmace

**Address:** Park Drive, Baldock, Herts, SG7 6EW



# MACHINE CODE — THE EASY WAY



**In this last part of his series David Ellis cures your printer problems and gives you his parting advice**

**L**ast time I promised you a program to cure those line feed problems on your printer — assuming that you have a printer of course! If you don't have a printer, read on — you may find some useful tips.

Just what is the problem with the line feeds though? Quite simply, the Amstrad at the end of each line sends both a carriage return + line feed (ASCII code 13) and a line feed (ASCII code 10) — hence two line feeds are issued giving the familiar double line spacing of all output to the printer. On some printers you may be able to set the dip switches to cancel the line feed, although on the EPSON printer that I tried this did not seem to cure the problem.

The suggested cure is to cut wire 14 on the printer lead. But do you know which wire is number 14? and even if you do find it, can you trust yourself with that Stanley knife! Fortunately the solution can be a lot simpler — intercept the characters that are being sent to the printer via the jumpblock, and when the line feed character comes along (number 10) change it to zero.

A zero character sent to the printer will have no effect so now you will only have a single line feed being issued for each carriage return. A slight problem does arise though. What if you do want to send the

character 10 to the printer? On my Daisywheel printer, for example, 12 characters to the inch (which is one of the standard pitches used) is set by the following code:-

```
PRINT #8, CHR$(27);CHR$(31);CHR$(10)
```

CHR\$(27) is the escape code, CHR\$(31) is recognised by the printer causing it to set the character pitch to the number that follows. This is set in 1/120ths. of an inch, so in this case 10 will set it to 12 CPI. However, each time 10 is sent to the printer it will be changed to zero, which on my printer sets the character pitch to 256/120ths. of an inch — just over two inches per character which was not what was intended!

The way to cure this problem is to pick an ASCII character that is not often used (in this article the square left bracket — ASCII 91) — check for it being sent to the printer, change its value to 10, and then send it to the printer. The BASIC line would then appear as:-

```
PRINT #8, CHR$(27);CHR$(31);"["
```

Having discussed the theory, let's see how to write the machine code program to perform this.

The routine that sends a

character to the printer is located via the jumpblock at &BD2B. This address will need to be "patched" to point to our machine code program. The last article explained how this was

done. Listing 1 shows the machine code program to check for the value of 10, and change it to zero, and the value of 91 and change it to 10. Note that the relative jumps are all forward ones. The displacement value is easily calculated by starting your count at zero and from the next instruction. Remember that 127 is the largest forward jump that you can make using the JR instruction.

The three bytes starting at &753E are those that were originally in the jump-block — a restart to the routine in ROM at &87F2. The code from &7541 to &754C puts the address of our machine code routine at &7530 (30000) into the jump-block, and also the JMP instruction (195) — the jump-block has therefore been

patched and will jump to &7530.

You could replace this with the following POKES if you like:-

POKE &bd2b,195 : POKE &bd2c,&30 : POKE &bd2d,&75

But this is a series on machine code programming so it would be preferable to use the latter method!

The DATA lines for the BASIC loader will therefore be:-

```
PRINT #8, CHR$(27);CHR$(31);CHR$(10)
```

When you have RUN the BASIC loader to put the machine code numbers into memory you will need to patch the jumpblock with CALL &7451. You should now find that your printer line feed problems are cured. If you wish to reset the jumpblock for any reason then a CALL to &bd37 will accomplish this.

Well that's about it for this series. I hope that you have learned enough to enable you to tackle some of the machine code books available with a

little more confidence. Don't fall into the trap of trying to write everything in machine code just to prove that you are better at it than your chums. You should only need to use it where speed is needed — such

as in arcade games — or where the timing is critical — such as with cassette operations. Using it to save memory is becoming less important as the size of RAM available in modern computers increases.

Use it where it is impossible to perform the operation in BASIC — the printer routine given here being a good example. Otherwise, if the program can be done in BASIC, or whatever high level language you are using, then do it in that language. I would imagine that

by the turn of the century most low level programming (if not all) will be compiled from high

level languages and that will make today's high level look like low level!

### LISTING 1.

```

&7530      CP 10          254 10 ; is it a line feed?
&7532      JR NZ NOT-10  32  4 ; go to NOT-10 if not
&7534      LD A,0         62  0 ; it is 10 so change to 0
&7536      JR MISS       40  6 ; miss the next bit
&7538      NOT-10 CP 91   254 91 ; is it a back-slash?
&753a      JR NZ MISS    32  2 ; miss next bit if not
&753c      LD A,10       62 10 ; it is 91 so change to 10
&753e      MISS RST &87f2 207 &f2 &87 ; send character to printer

&7541      LD A,195      62 195 ; 195 is the JMP opcode
&7543      LD (&bd2b),A  50 &2b &bd ; replace RST in jumpblock
&7546      LD HL,&7530   33 &30 &75 ; address of new routine
&7549      LD(&bd2c),HL  34 &2c &bd ; replace jumpblock address
&754c      RET           201      ; return
    
```

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# VENTURES

**In yet another missive from the dungeon, Peter Sweasey looks at *Dun Darach and Tinderbox* and tries to help those players sinking and calling for a hand**

**S**pare a thought for me as you laze in the sunshine. I am still here, perhaps almost forgotten, at the very bottom of Argus Towers. Anyway, the editor told me I've been writing too much, so enough of the mindless tittle tattle, and straight on to the reviews...

game any good?

It is called *Tinderbox*, and based upon the well loved fairy tale of the same name. In a far away land, there lived a king. One day he had a daughter, and was delighted, until a fortune teller predicted she would marry a common foot soldier. On hearing this, the king imprison-



Soft Aid is a marvellous example of how our industry can pull together in a common cause. At the time of its launch, Gremlin Graphics, the people behind *Monty Mole*, announced a low price children's adventure. Obviously this is a wonderful gesture, but is the

ed his daughter in a tower, and together with a terrifyingly wicked witch ruled the land cruelly. You play Tom, a wounded soldier, who arrives in this land and realises it is his destiny to marry the princess.

On side one of the tape is *The Book*, a fifty screen or so

rendition of the above story, which is not only entertaining to read, but also gives essential clues — indeed the whole order of actions. One of the features I particularly liked, also available in the actual game, was the ability to change background colour at the touch of a button. This is a good idea which other companies should emulate.

The game itself? Well I've been trying to put off any criticism of a product which is in such a worthy cause, but sadly I must say that *Tinderbox* is a great disappointment. It shows little of the professionalism Gremlin Graphics are known for. Presentation is dull, and uses the Spectrum's rather gross character set rather than a more pleasant redefined one. Graphics are drawn for many locations, although they are hardly artistic masterpieces, being small. They appear to have been made up of predefined characters, rather than drawn in hi-res like *The Hobbit*, or stored in memory à la Gremlins.

These alone would not make a bad game — neither would the brief text or total lack of interaction. No, the real let down is the vocabulary, and the computer's interpreter. Very few are understood. Some examples: in the pawnbrokers, the verb PAWN is not accepted (anyone stuck, try SELL); you cannot READ a map; there is no HELP (odd for a children's game), and in general, I found the response "I don't under-



stand" appearing far too often. Compared with Level 9 or Infocom, this game deserves to be in a museum.

Response times are also slow. The reason for this and some of the other problems lies in the fact that this game is written in BASIC. BASIC is not a very suitable adventure language, being both slow and memory consuming, and why anyone is still using it when The Quill is available is a mystery to me. If BASIC really must be used, at least program it to accept abbreviations, which will speed up running time — Tinderbox insists on full words.

This game could have been a massive hit. Sadly, it is uninspiring in its basic form. Nevertheless, it is cheap at £4.99, simple enough for beginners (if they can tolerate the vocabulary), and, perhaps most importantly, every copy sold will be saving lives in Africa.

Regular readers will remember that early in the year I gave a less than brilliant review to Gargoyle Games' Tir Na Nog. Although it had undeniably superb graphics, I felt it to be rather boring. The public disagreed, and it did well in the charts. Now comes Dun Darach, the sequel (or more accurately, a prequel), and when I loaded it I received a very nice surprise. More of that later, but first, the scenario, and I warn you, it contains some very silly names...

Once again, the story is set in far off Celtic times. Cuchu-

lainn, a real hero, while returning home from a rather nasty battle, was careless enough to lose his charioteer, Loeg. Actually, a devious sorceress with the power of invisibility called Skar, tempted him away, and naturally she has locked him up in a hidden city. Dun Darach is a maze of a place, made up of seven sectors: the old quarter, castle, financial quarter, pleasure zone, market, the dispossessed, and the streets of the gods.

You start in the money quarter, and can wander about at will. This, as far as I'm concerned, is where the similarity ends, for I think Dun Darach is much better. No longer are you in some featureless land; instead, you are in a network of named streets, each containing numbered shops and buildings. You can enter these if you wish, and inside you may find a shopkeeper with his wares. These you can pay for, using iridi, the local currency, or steal them — but this can be risky. You'll find grocers, pawnbrokers and, in the pleasure area, a casino, inside which you can make a nice profit by betting on the dice!

Wandering around with you are many independent characters, who you can talk or trade with. Fortunately, you cannot be killed — I never did like those stupid sidhe in Tir Na Nog — but you can be pick-pocketed, robbed and generally abused. Working with these characters is a vital part of the

game — if you can figure out how.

The graphics are astounding — the giant, superbly animated characters are now set against a far more attractive and interesting street backdrop. Sound, unfortunately, is restricted to a few beeps — when the CBM version arrives, I hope Gargoyle will use the extra memory for a great tune, which I'm sure they are capable of writing. The instruction booklet is readable and interesting, and the packaging very professional.

This is an exceptional example of an arcventure that will doubtless prove popular on the helpline. Its complexity will provide months of enjoyment. I'm impressed!

### Tinderbox

**Price:** £4.99

**Publisher:** Gremlin Graphics

**Address:** Alpha Hse, 10 Carver St, Sheffield S1 4FS

**SPECTRUM**



### Dun Darach

**Price:** £9.95

**Publisher:** Gargoyle Games

**Address:** 74 King St, Dudley, West Midlands DY2 8QB

**SPECTRUM  
AMSTRAD**



### Helpline

Straight down to business with Interceptor's popular adventure, Forest At The World's End. I've had some questions concerning this lying on my desk for ages, but not until recently had I played it or seen any reader hints for it.

Pascal Sendron from Ireland is stuck at the burnt out farm, early in the game. You need to wander about more — go south at the start, you'll need a gift, and use the log from the woodman's clearing to cross Eastwards.

R Warner is unable to use the rowing boat — you need to CLIMB INTO BOAT, then ROW! T J Avery of Dorset and

Londoner G V White both sent solutions, thanks.

G V White is himself having problems with Hewson's devious Fantasia Diamond. To go down the trapdoor, hit or break it several times, then it smashes. Knock on the brown door, you'll get the answer you need. The sheet of music is in a book in the chest — take it to the violinist, and ask him to play!

John Wilson from Rochdale sent me some useful clues. Amongst the games he has completed are Jewels Of Babylon, Witch's Cauldron, King Arthur's Quest, Ground Zero and, with amazing endurance, the awful Wrath of Magra. He gives help for Mark Compton of Ealing with Heroes Of Karn. The bottle is used to kill the pirate, a crowbar will open the clam, and the silver flute, when played, will enable you to get the flower.

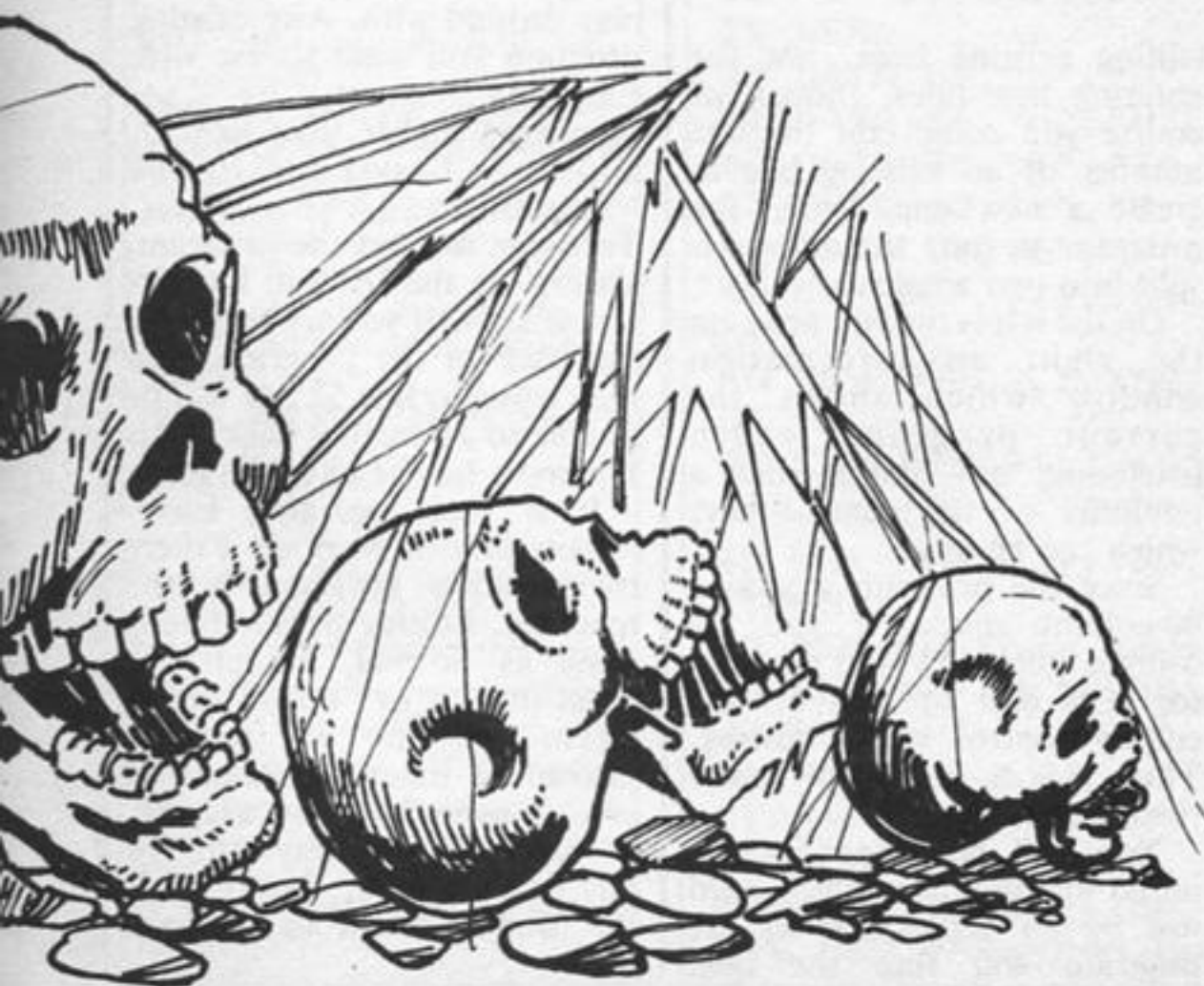
If you are stuck early on in Gremlins, you need to prevent them using that wretched snowplough, with equipment from the other garage in Kingston Falls. The gremlin in the bedroom can be killed by emptying the kitchen drawer. Gremlins reproduce in water, so a full swimming pool makes little sense, does it? Don't forget Gizmo!

Ian Dyga from Aberdeenshire has sent some Strangeloop hints. Go to the left hand side of A,A and wait for the credit to touch the top of the screen, then move towards it. The oil cans are at the bottom of Q,B; give one to the robot at T,C.

Congratulations to Freddie Still, from London E1, who has completed one of my favourite adventures ever, Valkyrie 17. He also helped me fly the plane, but I still haven't finished.

And finally, how many of you have completed Dummy Run by now? At the time of writing, a joint effort between myself, Brian Cousin and Chris Lovelace means we are nearly there. Some hints: use the duck to cross the ocean, and flag down some pebbles. Then load the catapult, mend the torch, and fire away. Use your prize to help fire the cannonball...

Remember, whether you're intrigued by Interceptor, lummoxed by Level 9, stumped by Scott Adams, annoyed by Artic or hot-headed about The Hobbit, Ventures can help. Write now!



# EASY-EDIT



**Using programmable keys, John Keneally's program sets out to make life easier when editing on the Amstrad**

There is no doubt that editing Basic programs on most machines is a rather clumsy process. Typing in the program initially is reasonably easy, providing there is an AUTO command, but editing existing lines by typing EDIT and the line number soon gets tedious.

A much better system would be one in which you could step backwards or forwards in the program simply by pressing a single key, altering any lines as needed. Fortunately on the CPC464 the presence of User-Definable keys makes it possible to do this, with the aid of a small self-modifying Basic program. It is not good programming practice to use programs which modify themselves, but in this case it is the only solution.

Easy-Edit is used purely for

editing existing lines, not for entering new lines, though of course you could edit the line number of an existing line to create a new one. When the program is run, the screen is split into two windows.

On the left is the edit area, on the right an information window which shows the current program length (excluding any data), and a reminder of the control keys which can be used.

Since the program works in 80-column mode, if you are using a colour TV and modulator it is best to turn off the colour control whilst editing. This makes it much more readable.

You will be asked for the initial line number, which need not be an actual line as the program will find the next

highest line if it doesn't exist. The lowest line number you can use is 53, so enter that if you want to start at the beginning of the program.

Lines 100 and 110 in the program are simply for you to play around with. Any existing program you want to use with Easy-Edit must be re-numbered higher than line 53, allowing Easy-Edit to be MERGED in.

To move around the program, simply use the UP and DOWN arrow keys. If you try to go too far back in the program, you may come to line 52 but will be unable to go further back. This line must not be altered!

It is there to give Easy-Edit a line to work on if there is no other program in the machine. Editing of any line is done as normal, except you press the up or down arrow when the line is finished, instead of Enter as normal. If you do press Enter by mistake, or drop out of Easy-Edit for any other reason, simply press the down arrow to get back in.

You can restart Easy - Edit at any time by pressing the decimal point key on the number pad. Also, for a controlled exit in order to enter new program lines, press CTRL Z. This will automatically enter an AUTO command, so you just need to type the start line for the new program. When finished, press ESC as usual, followed by the number-pad decimal point key to re-enter Easy-Edit.

Various control keys have been set up to allow single-key entry of the most commonly used Basic commands, as shown in the right-hand window. Just press CTRL and the appropriate letter. This greatly speeds up editing and entry of new lines.

### How it works

- 1-4 initialise
- 5-6 print program length
- 7-12 poke in S/R to find Basic line address
- 14-15 print legend
- 16-17 redefine keys, get start line
- 18-20 initialise some variables
- 21 find address of line 26
- 22-23 find line no of next Basic line
- 24 tidy up screen
- 25 enter Basic line into line 26
- 26 this is poked with current Basic line number
- 28-30 Up/Down arrow actions
- 31-32 get address of Basic line
- 33-48 redefine keys
- 49-51 restore keys

### Variables

- zyul** lowest user-program line number
- zyel** line no. which is self-modified
- bline** current Basic line number
- zydb%** marker for whether up or down arrow was pressed
- zyerr%** error mark when finding a Basic line address. 1 if line no. is 2 if line is within program but doesn't exist
- zya%** address of next-highest Basic line
- zyb%** address of previous line
- zynn** key number
- zylc\$** lower-case key
- zyuc\$** upper-case key
- zytxt\$** text for key expansion
- zyelad%** address for Poking in line number

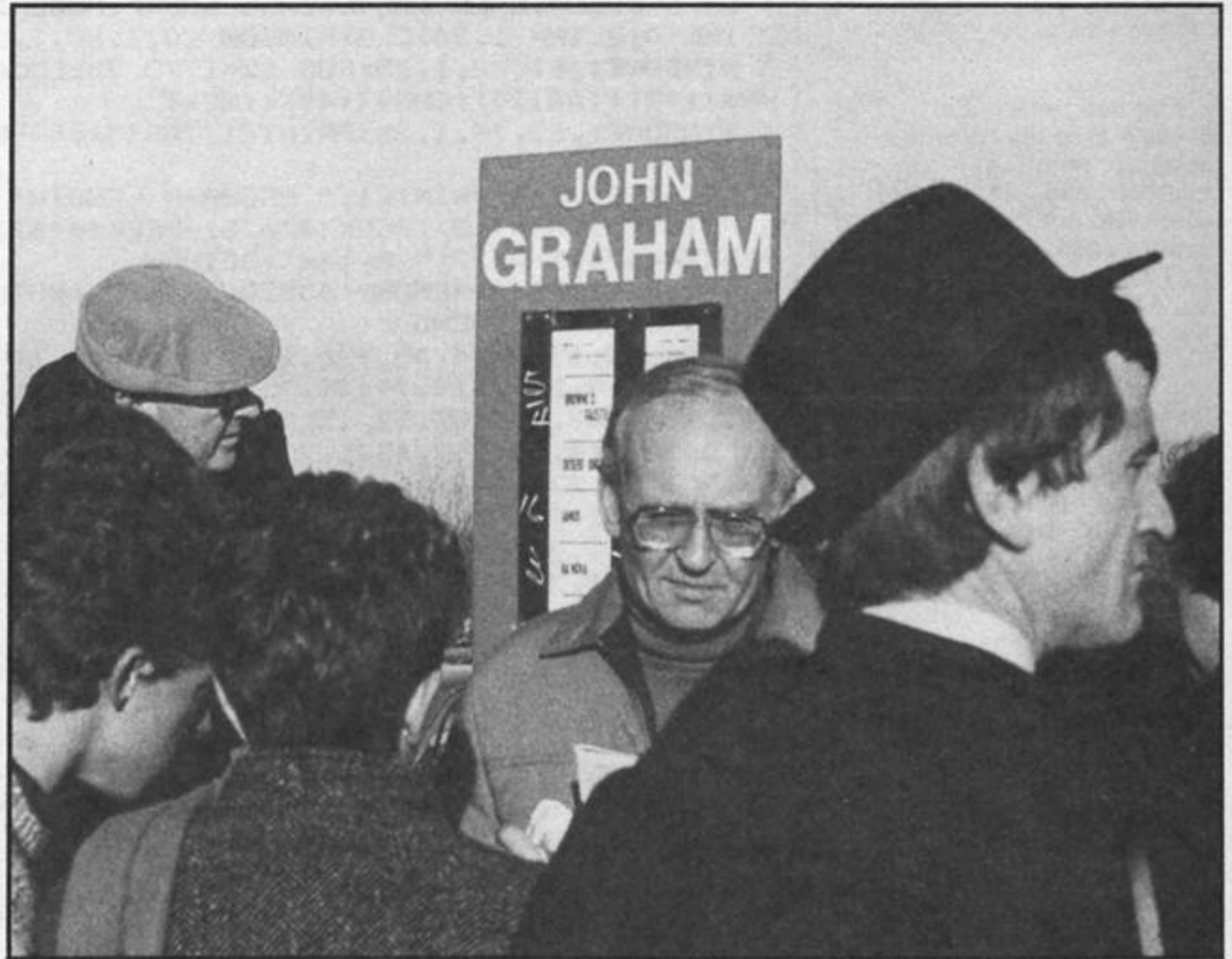
### Conversions

Not really relevant for other computers as the program uses too many special features of the CPC464. For a disc system, use a + 42541 and MEMORY 42540 in line 7.

```

1 CALL &BBBA:CALL &BB4E:CALL &BBFF:MODE 2:BORDER 2
2 INK 0,2:INK 1,24:CLS:WINDOW £0,1,60,1,25
3 WINDOW£1,61,80,1,25:FOR i%=1 TO 25:LOCATE£1,1,i%:PRINT£1,CHR$(149);TAB(20);CHR$(149);:NEXT
4 WINDOW£1,62,79,1,25:PRINT£1,TAB(3);"--EASY EDIT--":GOSUB 5:GOTO 7
5 LOCATE£1,1,4:PRINT£1," PROGRAM LENGTH"
6 PRINT£1,CHR$(18);PEEK(44675)-PEEK(44673)+256*(PEEK(44676)-PEEK(44674))-2327;" Bytes":RETURN
7 b=0:RESTORE 8:MEMORY 43820:a=43821:WHILE b>=0:READ b:POKE a,ABS(b):a=a+1:WEND
8 DATA 42,129,174,35,126,167,32,10,62,1,221,110,4,221,102,5
9 DATA 119,201,229,79,35,35,94,35,86,221,110,6,221,102,7
10 DATA 167,237,82,32,13,175,209,221,110,2,221,102,3,115,35
11 DATA 114,24,217,48,5,209,62,2,24,238,209,221,110
12 DATA 0,221,102,1,115,35,114,235,6,0,9,24,188,-1
13 PRINT£1:PRINT£1
14 PRINT£1,"CONTROL KEYS":PRINT£1
15 PRINT£1,"Z = Finish Edit":PRINT£1,". = Restart"
16 GOSUB 33:CLS:REM redefine keys
17 INPUT"Enter Line number ",bline
18 zyul=53:zyel=26:IF bline <zyul THEN PRINT"Too low":GOTO 17
19 zydb=1
20 CLS:zysbl=bline:bline=zyel:zydb%=1
21 GOSUB 31:zyelad%=zya%+7:bline=zysbl:IF zyerr%<>0 THEN 1
22 GOSUB 5:GOSUB 31:bline=PEEK(zya%+2)+256*PEEK(zya%+3)
23 IF (zyerr%=2 AND (zydb%<0)) OR zyerr%=1 THEN bline=PEEK(zyb%+2)+256*PEEK(zyb%+3):zya%=zyb%+PEEK(zyb%)
24 PRINT CHR$(11);CHR$(18);
25 GOSUB 51: REM poke in edit line no.
26 EDIT 52
27 STOP
28 zydb%=1:bline=bline+1:GOTO 22
29 zydb%=-1:IF bline>zyul THEN bline=bline-1:GOTO 22 ELSE 22
30 GOTO 25
31 REM Find address of Basic line
32 zyerr%=0:zya%=0:zyb%=0:CALL 43820,bline,@zyerr%,@zya%,@zyb%:RETURN
33 REM redefine keys
34 zycd=0:RESTORE 40
35 WHILE zynn<>50:READ zynn,zylc$,zyuc$,zytxt$,zycd
36 KEY DEF zynn,1,ASC(zylc$),ASC(zyuc$),zycd
37 PRINT£1,zyuc$;" = ";zytxt$
38 KEY zycd,zytxt$
39 WEND
40 DATA 52,"g","G","GOTO ",&8d,53,"f","F","FOR ",&8f
41 DATA 46,"n","N","NEXT ",&90,27,"p","P","PRINT ",&91
42 DATA 35,"i","I","IF ",&92,54,"b","B","BORDER ",&93
43 DATA 62,"c","C","CLS ",&94,61,"d","D","DATA ",&95
44 DATA 51,"t","T","THEN ",&96,50,"r","R","RETURN",&97
45 KEY DEF 0,1,159,159,159:KEY 159,CHR$(13)+"goto 29"+CHR$(13)
46 KEY DEF 2,1,158,158,158:KEY 158,CHR$(13)+"goto 28"+CHR$(13)
47 KEY DEF 71,1,122,90,157:KEY 157,CHR$(13)+"gosub 49"+CHR$(13)+"AUTO "
48 KEY DEF 7,1,138,138,156:KEY 156,CHR$(13)+"RUN"+CHR$(13):RETURN
49 REM restore keys
50 KEY DEF 0,1,240:KEY DEF 2,1,241:PRINT CHR$(11);CHR$(18);:RETURN
51 POKE zyelad%,bline-256*INT(bline/256):POKE zyelad%+1,INT(bline/256):RETURN
52 REM dummy line. Do not alter
100 REM A two-line dummy program for demo purposes
110 REM This can be edited using EASY EDIT
    
```

# SPECTRUM PUNTER



## Get an edge over the bookie with Ray Elder's Spectrumised horseracing forecaster

This program developed out of an idle speculation by a friend that it would be nice if his computer could earn its keep by helping him win at the bookies.

I was interested in this, as what more appropriate activity for a computer is there than storing race information and using it to make a forecast?

Ideally the computer should store facts about all the variables associated with racing; form, trainer, jockey, course type, going, time, etc. It soon became obvious that a massive amount of storage was going to be required and it would be a full time job just entering all the data on a daily basis.

Although I gave up the idea of an in-depth data bank forecaster I have a sneaking suspicion that it could be done...

Meanwhile I wrote this very simple program which makes a rough assessment based on day

to day information as given in the daily newspapers. I tried to include all the factors I take into consideration when I make my regular, annual visit to the bookies for the Grand National and, having entered them tried to give them appropriate

"weighting" values which are added to a running total — array n().

Now not everybody gives the same weight to the same factors, so I will explain mine and how you can adjust them to suit your own preferences.

### How it works

The weighting is done in lines 150 to 159. Line 150 adds (approx) 6 for each win, 5 for 2nds, 2 for 3rds and 1 for fourths. Doubling or trebling the 12 will double or treble the amount, increasing or decreasing the 2.5 (used to give 2\* the average on 5 races) will also increase/decrease the ratio of importance of places/races. If direct weightings are required then replace 150 with four lines, 150-153 of IF q = 1/2/3/4 THEN LET a = etc.

Line 154 adds 10/20/30/40 or 50 to total for each of the jockey, trainer and personal ratings. 1 is top rating 5 is the worst. I added "personal rating" to allow user influence due to any personal factors i.e. you like the name!

I use it if a jockey and trainer only have one race in a meeting, I reckon they'll be trying harder! If you don't want to add a personal weighting just enter the same number (1 to 5) for all the runners in the race.

Line 155 adds or subtracts a value depending on the ratio of horses beaten or otherwise to the number of horses running. This number will vary depending on the field. If only two horses are running and one has beaten the other, the difference factor will be 20. If you do not wish to use this just enter 0 for each runner.

Line 157 adds or subtracts 10 depending on the class of the race. If a horse has taken a large drop or increase in class (more than £5000) it may effect his performance. Enter 0 for all horses if you do not want this to be taken into account.

Line 158 adds a ratio value to the maximum of 5 depending on how many tipsters have chosen this horse. If you don't want their opinion to influence the assessment enter 0 for all runners.

Finally line 159 allows for a random factor to be added up to 10) to each horse individually to simulate "luck". Enter 0 if not required. I add it to horses with no previous form.





**Hints on conversion**

Now there may be factors which you may want to add, jockey weights etc, these may be included by adding the question to the data lines at 9120 onwards (making sure 9900 is the last of all the data lines), and following it by the top value which the user may input.

Next increase the loop limit at line 130 by one for each extra question and add an IF q = 14/15/16 etc line from 160 to 170 — overwriting the REMs, modifying the value of "a" which will be returned from the input routine before it is added to the total.

As I said at the beginning, this is a FUN program and I do not advise anyone to put the family heirlooms in the pawnbrokers to raise cash to bet on the forecasts made by this program, however the odd 10p bet may add to the fun. If anyone does succeed in modifying or amending it so that it has a high success rate then I'd appreciate a copy, just as a matter of interest of course!

```

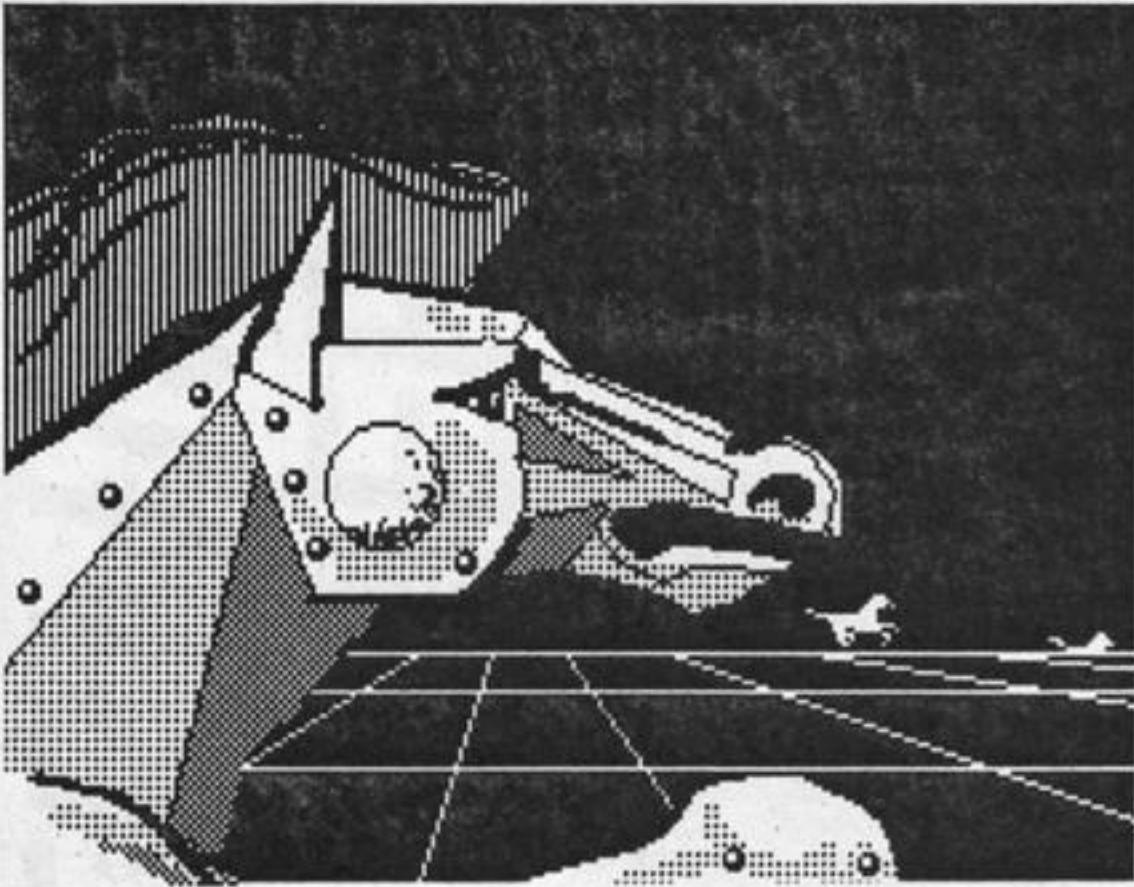
1 REM punter
87 REM *****
88 REM initialise race factors
89 REM *****
90 RESTORE 8000: GO SUB 1000:
LET d=a
100 GO SUB 1000: LET b=a
105 GO SUB 1000: LET c=a: IF c=
0 THEN LET c=1
106 REM *****
107 REM set up stores
109 REM *****
110 DIM n$(b,16): DIM n(b)
117 REM *****
118 REM loop for no.of runners
119 REM *****
120 FOR r=1 TO b: CLS : BEEP .2
,7
125 PRINT AT 2,0;"Enter details
of horse no ";r: INPUT "Enter n
ame of horse "; LINE n$(r): PRIN
T AT 4,10;n$(r)
126 REM *****
127 REM loop for 13 questions
128 REM increase q if more
questions added
129 REM *****
130 RESTORE 9000: FOR q=1 TO 13
140 GO SUB 1000
147 REM *****
148 REM question weightings on q
149 REM *****
150 IF q>0 AND q<5 THEN LET a=
INT ((a*(12/q))/2.5)
154 IF q>4 AND q<8 THEN LET a=
(6-a)*10
155 IF q=8 OR q=9 THEN LET a=I
NT ((a/(b-1))*10)*(-(q=9))
157 IF q=10 OR q=11 THEN LET a
=a*10*(-(q=10))
158 IF q=12 THEN LET a=INT (5*
(a/c))
159 IF q=13 THEN LET a=a*INT (
RND*10+1)
165 REM *****

```

```

166 REM all further question
values here.
167 REM *****
168 REM add to total for horse
169 REM *****
170 LET n(r)=n(r)+a
180 NEXT q: NEXT r
190 CLS
197 REM *****
198 REM print results
199 REM *****
200 FOR i=1 TO b: PRINT n$(i);n
(i): IF d THEN LPRINT n$(i);n(i
)
210 NEXT i
217 REM *****
218 REM all done, any more ?
219 REM *****
220 GO SUB 1000
230 IF a THEN RUN
300 STOP
997 REM *****
998 REM all purpose input.
first read question and
input limit.
999 REM *****
1000 READ z$,y
1005 BEEP .15,0: INPUT (z$); LIN
E a$: IF a$="" THEN GO TO 1005
1007 REM *****
1008 REM check for valid input
1009 REM *****
1010 FOR i=1 TO LEN a$: IF a$(i)
>"9" OR a$(i)<"0" THEN GO TO 10
05
1020 NEXT i: LET a=VAL a$
1030 IF a<0 OR a>y THEN GO TO 1
005
1040 RETURN
7997 REM *****
7998 REM initial race questions
7999 REM *****
8000 DATA "Do you want a printou
t of the results 1=yes, 0=no "
,1
8010 DATA "How many horses runni
ng in this race ",40
8020 DATA "How many tipsters for
this race ",12
8997 REM *****
8998 REM horse questions
8999 REM *****
9000 DATA "How many wins in the
last five races ",5
9010 DATA "How many second place
s in the last five races ",5
9020 DATA "How many third places
in the last five races ",5

```



9025 DATA "How many fourth places in the last five races ",5  
 9040 DATA "Jockey rating 1 - 5 ",5  
 9050 DATA "Trainer rating 1 - 5 ",5  
 9055 DATA "Personal rating 1 - 5 ",5

9060 DATA "How many other horses in the race has it beaten ",b  
 9070 DATA "How many horses in this race have beaten it ",b  
 9080 DATA "Is the value of this race very much higher than any previous race 1=yes, 0=no ",1  
 9090 DATA "Is the value of this race very much lower than any previous race 1=yes, 0=no ",1  
 9100 DATA "How many tipsters suggest this horse ",c  
 9110 DATA "Do you want a random factor added to this horse 1=yes, 0=no ",1  
 9897 REM \*\*\*\*\*  
 9898 REM end of program question -this must be the last data item.  
 9899 REM \*\*\*\*\*  
 9900 DATA "Press 1 to forecast an other race or 0 to end program ",1

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## HCW needs you

Have you ever looked at the articles and programs in HCW and thought you could have written that?

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Submissions tend to fall into one of three categories...

**Programs** are always supplied on cassette and are accompanied by full details of the program variables. Please type these details double-spaced. Listings are helpful, but not essential. What is vital is that the programs should be completely error free, so please double check.

**Articles** on certain aspects of using home computers should be no longer than 1000 words. Try to keep to the style you see in HCW and include programming examples where they will help the reader understand the subject. We will convert your sketched illustrations into final artwork.

We also use **short tips**, articles and **brief programming routines**. Any discoveries you have made about your machine might be of interest to other readers.

All contributions are acknowledged and those accepted for publication are paid for at competitive rates. The copyright in such work will pass to Argus Specialist Publications Ltd. Keep a copy of your work and include a telephone number and an SAE. Please label everything clearly with your name and the machine concerned.

All contributions should be sent to:

Submissions  
 Home Computing Weekly  
 No.1 Golden Square London W1R 3AB

AMSTRAD GAME

# UFO SHOOT- OUT



**Alien spacecraft are coming to get you! Fight it out in Tony Guyon's game for the Amstrad**

Use your trigger finger in this UFO shoot-out game. There's a touch of animation in the drawing of the trench, too. If you want to change the program to use any set of keys, you can alter line 110.

#### Variables

**X,Y** your laser sight  
**S** shots fired  
**H,V** co-ordinates for ship  
**HI** hits  
**AS** ship target

#### How it works

10-110 title  
 120-230 UDGs  
 230-300 set up screen  
 310-500 main program  
 1000-1060 subroutine for hit  
 2000-2060 subroutine for shot  
 3000-3030 moves ship to a different position every time ship goes off screen or shot is fired  
 4000-4110 end of game screen  
 5000-5190 draws trench



```

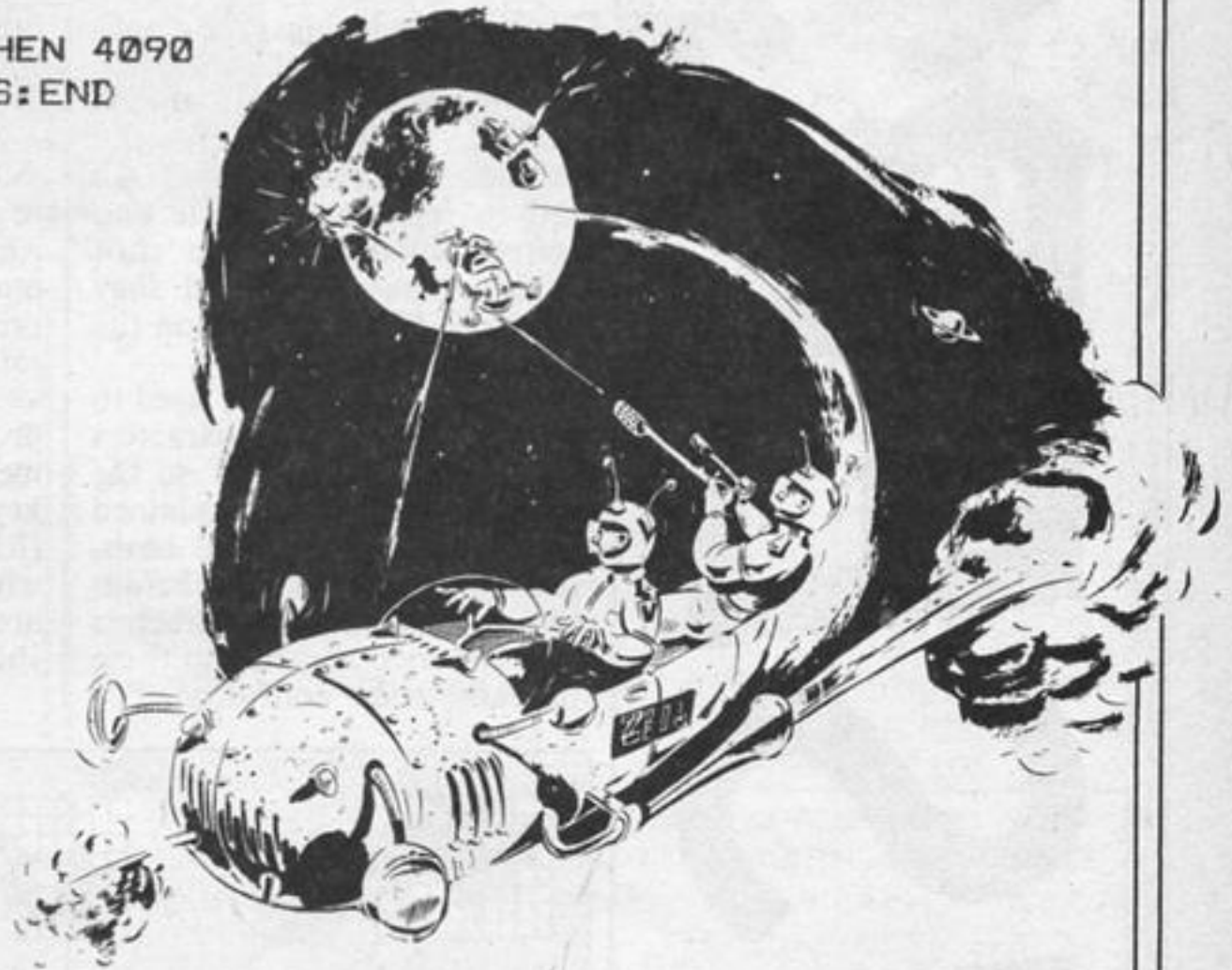
10 REM UFO SHOOT BY TONY GUYON
20 CLS :MODE 1:BORDER 0:INK 0,0
30 LOCATE 16,2 :PEN 1:PRINT CHR$(24)"U.F.O. SHOOT"CHR$(24)
40 LOCATE 16,4:PRINT"BY T.GUYON"
50 LOCATE 5,8:PEN 3:PRINT" You are flying along a trench on a distant planet
. suddenly aliens cross your path! line up your si
ght and shoot!You have only 50 shots to get as many as you can."
60 LOCATE 1,15:PEN 1:PRINT"Press J for Joystick or C for Cursorkeys"
70 LOCATE 16,20:INK 2,0,18:SPEED INK 5,5:PEN 2:PRINT"GOOD LUCK!"
80 c$="":WHILE c$="":c$=INKEY$:WEND
90 IF c$="j" OR c$="c"THEN GOTO 100 ELSE 80
100 IF c$="j" THEN U=72:D=73:L=74:R=75:F=76
110 IF c$="c" THEN U=0:D=2:L=8:R=1:F=9
120 MODE 0
130 SYMBOL AFTER 200
140 SYMBOL 200,&1C,&2B,&24,&1,&1,&24,&2B,&1C
150 SYMBOL 201,&3B,&14,&24,&80,&80,&24,&14,&3B
160 SYMBOL 202,&3,&7,&1F,&2A,&15,&F,&13,&20
170 SYMBOL 203,&C0,&E0,&F8,&AC,&5B,&F0,&C8,&4
180 SYMBOL 204,&10,&13,&16,&1D,&1D,&16,&13,&10
190 SYMBOL 205,&8,&C8,&6B,&B8,&B8,&6B,&C8,&8
200 SYMBOL 214,&B,&7,&7E,&7,&7F,&3F,&E,&11
210 SYMBOL 215,&D0,&E0,&7E,&E0,&FE,&FC,&70,&8B
220 SYMBOL 216,&0,&0,&2A,&1C,&3E,&77,&1C,&2A
230 REM *****SET UP SCREEN
240 INK 14,24:GOSUB 5000
250 WINDOW #1,11,20,1,1:PAPER#1,9:PEN#1,7:CLS#1
260 WINDOW #2,1,20,2,17:PAPER#2,0:CLS#2
270 WINDOW #3,1,10,1,1:PAPER#3,9:PEN#3,14:CLS#3
280 PRINT#1,"S"CHR$(252):PRINT #3,"H"CHR$(216)
290 s=0: hi=0:v=320
300 a$=CHR$(214)+CHR$(215):TAG
310 REM*****MAIN PROGRAM
320 x=320:y=250
330 INK 4,26
340 PLOT x,y,4:CALL &BC19:PRINT CHR$(200)+CHR$(201);
350 h=h+10
360 IF hi>10 THEN h=h+5 : a$=CHR$(202)+CHR$(203)
370 IF hi>25 THEN h=h+5 : a$=CHR$(204)+CHR$(205)
380 IF h>640 THEN h=1:GOSUB 3000
390 PLOT h,v,6:PRINT a$;
400 IF INKEY(L)=0 THEN MOVE x,y:PRINT" ";:x=x+-20
410 IF x<=1 THEN x=1
420 IF INKEY(R)=0 THEN MOVE x,y:PRINT" ";:x=x+20
430 IF x>=592 THEN x=592
440 IF INKEY(D)=0 THEN MOVE x,y:PRINT" ";:y=y+-20
450 IF y<=145 THEN y=145
460 IF INKEY(U)=0 THEN MOVE x,y:PRINT" ";:y=y+20
470 IF y>=380 THEN y=380
480 IF INKEY(F)=0 AND TEST(x+32,y-8)=6 THEN GOSUB 1000
490 IF INKEY(F)=0 THEN GOSUB 2000
500 MOVE h,v:PRINT" ";:GOTO 330
1000 REM***** SUB FOR HIT
1010 hi=hi+1:PRINT #3,"H"CHR$(216)hi
1020 CLS#2
1030 s=s+1:h=1
1040 ENV 1,10,-1,15:ENT 1,10,50,5,9,-10,10:SOUND 2,400,150,15,1,1,10
1050 GOSUB 3000
1060 GOTO 320
2000 REM***** SUB FOR SHOT
2010 s=s+1:INK 4,7:PRINT#1,"S"CHR$(252)s
2020 MOVE h,v:PRINT" ";
2030 GOSUB 3000
2040 FOR p=10 TO 110 STEP 20:SOUND 1,p,1,7:NEXT
2050 IF s>49 THEN GOSUB 4000
2060 MOVE h,v:PRINT" ";:GOTO 330
3000 REM*****RANDOM POSITION OF SHIP
3010 v=INT (RND*400)

```



```

3020 IF v<145 OR v>370 THEN GOTO 3010
3030 RETURN
4000 REM*****END OF GAME
4010 CLS#1:INK 7,7,26:SPEED INK 5,5 :PRINT#1,"EMPTY!"
4020 SOUND 132,0,0:FOR D=1 TO 1000:NEXT
4030 CALL &BC02:BORDER 0:INK 0,0
4040 MODE 1:LOCATE 11,3:PEN 1:PRINT"YOUR LASER IS EMPTY"
4050 LOCATE 11,6:PEN 3:PRINT"YOUR MISSION IS OVER"
4060 rat=hi*2
4070 LOCATE 5,14:PEN 2:PRINT"YOUR HITS TO SHOTS RATIO IS"rat%"
4080 LOCATE 11,24:PEN 3:PRINT CHR$(24)"ANOTHER GAME? (Y/N)"CHR$(24)
4090 e$=UPPER$(INKEY$)
4100 IF e$=""OR(e$<>"Y" AND e$<>"N")THEN 4090
4110 IF e$="Y"THEN CLS:RUN 60 ELSE CLS:END
5000 REM*****DRAW TRENCH
5010 col=1:yc1=100:yc2=110
5020 c1=8:c2=9
5030 INK 1,c1: INK 2,c2
5040 CLS:FOR xc=10 TO 320
5050 c=INT(col+0.5)
5060 PLOT xc+320,yc1,c
5070 DRAW xc+320,yc2,c
5080 DRAW 318-xc,yc2,c
5090 DRAW 318-xc,yc1,c
5100 yc1=yc1+0.6
5110 yc2=yc2-0.6
5120 IF yc1>120 THEN yc1=120
5130 IF yc2>120 THEN yc2=120
5140 col=col+((318-xc)/640)/4
5150 IF col+0.5>=3 THEN col=col-2
5160 NEXT
5170 INK 1,c1,c2:INK 2,c2,c1
5180 SOUND 4,100,-4700,3,0,0,12
5190 RETURN
    
```



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# C64 USERS

**Attention all C64 users! Listings will be simpler to type in due to the new standard that we have adopted from our sister magazine Your Commodore**

Commodore listings are rather well known for the horrible little black blobs that always abound. Unfortunately the graphics characters which are used to represent graphic and control characters do not reproduce very well and they are also difficult to find on the Commodore keyboard.

For this reason HCW used to precede any control characters with a REM statement on the previous line that explained exactly what the black blobs were meant to be. Unfortunately the graphics characters were not documented and these still cause some confusion. For

this reason we are marking the control and graphic characters in our listings.

In future all control and graphics commands will be replaced by a mnemonic within square brackets. This mnemonic is not typed out as printed in the magazine but rather the corresponding key or keys on the keyboard are pressed. For example [RIGHT] means press the cursor right key, you do not type in [RIGHT]. All of the keywords, what keys to press and how they are shown on the screen are shown below.

Any character that is accessed by pressing shift and letter will be printed as [s LETTER]

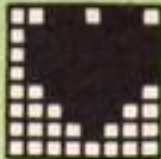










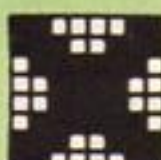
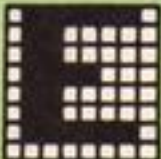
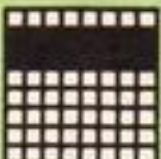



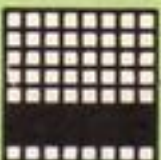



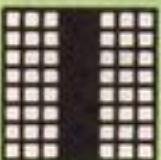



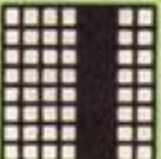

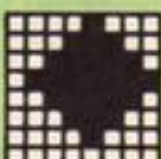



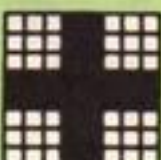


[s A] shift and A  
[s C] shift & C

Any character that is accessed by pressing the Commodore key and a letter will be printed as [c LETTER]

[c A] Commodore & A  
[c C] Commodore & C  
[c I] Commodore & I

Any control key will be printed out as a number. For example [001]. Control codes are accessed by pressing the CTRL and a letter at the same time [001] is CTRL & A, 002 is CTRL & B etc. See the manual for more information about control codes.

[001] CTRL & A  
[026] CTRL & Z

 CLR	 YEL	 F6	 CBM & BLK
 HOME	 RVS ON	 F8	 CBM & WHT
 BLK	 RVS OFF	 CURSOR DOWN	 CBM & RED
 WHT	 F1	 CURSOR UP	 CBM & CYN
 RED	 F3	 CURSOR RIGHT	 CBM & PUR
 CYN	 F5	 CURSOR LEFT	 CBM & GRN
 PUR	 F7	 INSERT	 CBM & BLU
 GRN	 F2	 DELETE	 CBM & YEL
 BLU	 F4		

# SWIMMING



**It's time to climb into your costumes and test the water in this two player game from Stuart Smalley**

This game, for the BBC computer, consists of racing a swimmer against another player or the computer. The swimmers are controlled by pressing the 'R' and 'Z' keys alternately, and turned at the end of the baths by pressing 'S'. The second player uses keys ',' and '/' to move and ';' to turn. These keys can be altered by changing the INKEY values in lines 340 to 390.

If two players are unevenly matched the computer can assist the weaker player. This is done by selecting a one player game and inputting a reasonably high difficulty level. The keys can be used as normal but the computer will then turn the swimmer when it reaches the end of the bath, and depending on the difficulty level, will move the swimmer slightly.

Once the program is run the number of players and level of difficulty is input. These may be altered at any time by pressing 'Escape'.

### Variables

**C%** is true if one player game  
**P%** number of player moving  
**D%** difficulty level  
**L%** number of lengths  
**T%** number of player turning  
**X%** x co-ordinate  
**Y%** y co-ordinate  
**ARM%** determines shape of swimmer and ensures players press keys alternately  
**movement%** direction of swimmer  
**length%** number of lengths completed

**lswim\$** holds shapes of the swimmers travelling towards the left  
**rswim\$** holds shapes of the swimmers travelling towards the right  
**swimmer\$** current swimmer shape

```

10REM      STUART SMALLEY, APRIL 1985
20ON ERROR IF ERR=17 Z%=0:RUN ELSE REPORT:
PRINT" at line ";ERL:END
30MODE7
40IF Z%<>-704134 PROCINST
50PROCINIT
60MODE2
70PROCscreen
80REPEAT
90PRINTTAB(8,6);TIME/100
100PROCKEYS
110UNTILlength%(0)=L% OR length%(1)=L%
120PRINTTAB(3,9);
130COLOUR129
140IF length%(0)=L% PRINT"Player 1 wins!" E
LSE PRINT"Player 2 wins!"
150*FX15,0
160SOUND3,1,4,85
170COLOUR11
180COLOUR131
190PRINTTAB(3,11)"Another game?"
200REPEAT
210ans$=GET$
220UNTIL INSTR("yYnN",ans$)>0
230IF ans$="Y" OR ans$="y" RUN
240END
250DEFPROCMOVE(P%)
260SOUND1,-15,150+50*P%,1
270X%(P%)=X%(P%)+movement%(P%)
280PRINTTAB(X%(P%),Y%(P%))swimmer$(P%,ARM%(
P%));
290IF X%(P%)=16 AND movement%(P%)=1 movemen
t%(P%)=0:length%(P%)=length%(P%)+1 ELSE IF X%
(P%)=0 AND movement%(P%)=-1 movement%(P%)=0:l
ength%(P%)=length%(P%)+1
300PRINTTAB(0,1);length%(0):PRINTTAB(19,1);
length%(1)
310ARM%(P%)=(ARM%(P%)+1) MOD 2
320ENDPROC
330DEFPROCKEYS
340IF INKEY(-66) AND NOT INKEY(-98) AND ARM
%(0)=0 PROCMOVE(0)
350IF INKEY(-98) AND NOT INKEY(-66) AND ARM
%(0)=1 PROCMOVE(0)
    
```



```

360IF INKEY(-82) AND NOT INKEY(-66) AND NOT
INKEY(-98) PROCTURN(0)
370IF INKEY(-105) AND NOT INKEY(-73) AND AR
M%(1)=1 PROCMOVE(1)
380IF INKEY(-73) AND NOT INKEY(-105) AND AR
M%(1)=0 PROCMOVE(1)
390IF INKEY(-88) AND NOT INKEY(-105) AND NO
T INKEY(-73) PROCTURN(1)
400IF C% PROCCOMP
410ENDPROC
420DEFPROCCOMP
430IF RND(D%)=1 PROCMOVE(1)
440IF RND(D%)=1 PROCMOVE(1)
450IF length%(1)=L% ENDPROC
460IF (X%(1)=0 AND movement%(1)<>1) OR (X%(
1)=16 AND movement%(1)<1) PROCTURN(1)
470ENDPROC
480DEFPROCTURN(T%)
490IF X%(T%)=-1 X%(T%)=0
500IF X%(T%)=16 movement%(T%)=1 ELSE IF X%(
T%)=0 movement%(T%)=-1
510IF movement%(T%)=1 movement%(T%)=-1:swim
mer$(T%,0)=lswim$(0):swimmer$(T%,1)=lswim$(1)
ELSE movement%(T%)=1:swimmer$(T%,0)=rswim$(0
):swimmer$(T%,1)=rswim$(1)
520PRINTTAB(X%(T%),Y%(T%))swimmer$(T%,ARM%(
T%));
530ENDPROC
540DEFPROCscreen
550VDU23;8202;0;0;0;
560COLOUR131
570CLS
580COLOUR1
590PRINTTAB(0,12)STRING$(20,CHR$143);
600PRINTSTRING$(20,CHR$144);
610COLOUR2
620PRINTTAB(0,0)"Player 1";TAB(12,0)"Player
2"
630VDU28,0,31,19,14
640COLOUR132
650CLS
660VDU28,0,27,19,19
670COLOUR134
680CLS
690VDU26
700GCOLOR,0
710FOR Y%=130 TO 340 STEP70
720FOR X%=0 TO 1279 STEP48
730MOVEX%,Y%
740DRAW X%+32,Y%
750NEXT
760NEXT
770COLOUR3
780COLOUR129
790PRINTTAB(8,4)"Time"
800COLOUR7
810COLOUR132
820PRINTTAB(0,14)STRING$(60,CHR$142);
830PRINTTAB(0,28)STRING$(60,CHR$142);
840COLOUR134
850PRINTTAB(0,22)RIGHT$(swimmer$(0,1),3)
860PRINTTAB(0,24)RIGHT$(swimmer$(0,0),3)
870ENDPROC
880DEFPROCINIT
890VDU23,130,0,0,0,0,0,0,16,44
900VDU23,131,0,0,0,16,56,126,239,199
910VDU23,132,0,0,0,96,240,240,150,99
920VDU23,133,0,0,0,0,0,16,56,44
930VDU23,134,1,3,7,6,6,6,15,63
940VDU23,135,224,240,0,96,240,240,144,96
950VDU23,136,0,0,0,6,15,15,105,198
960VDU23,137,0,0,0,8,28,126,247,227
970VDU23,138,0,0,0,0,0,0,8,52
980VDU23,139,7,15,0,6,15,15,9,6
990VDU23,140,128,192,224,96,96,96,240,252
1000VDU23,141,0,0,0,0,0,8,28,52
1010VDU23,142,239,239,239,239,239,239,239,0
1020VDU23,143,124,254,254,254,130,130,0,124

```

```

1030VDU23,144,254,254,186,130,130,130,130,13
0
1040ENVELOPE1,2,6,0,0,255,0,0,126,0,0,-126,1
26,126
1050DIM lswim$(1),rswim$(1),X%(1),Y%(1),ARM%(
1),swimmer$(1,1),movement%(1),length%(1)
1060movement%(0)=1
1070movement%(1)=1
1080rswim$(0)=CHR$32+CHR$130+CHR$131+CHR$132
1090rswim$(1)=CHR$32+CHR$133+CHR$134+CHR$135
1100lswim$(0)=CHR$136+CHR$137+CHR$138+CHR$32
1110lswim$(1)=CHR$139+CHR$140+CHR$141+CHR$32
1120swimmer$(0,0)=rswim$(0)
1130swimmer$(0,1)=rswim$(1)
1140swimmer$(1,0)=rswim$(1)
1150swimmer$(1,1)=rswim$(0)
1160X%(0)=-1
1170X%(1)=-1
1180Y%(0)=22
1190Y%(1)=24
1200TIME=0
1210ENDPROC
1220DEFPROCINST
1230Z%=-704134
1240PRINTTAB(13,1)CHR$141+CHR$134+"SWIMMING"
1250PRINTTAB(13)CHR$141+CHR$134+"SWIMMING"
1260PRINTTAB(4,4)CHR$130+"(C) STUART SMALLEY
, APRIL 1985"
1270PRINT'"This is a game for one or two pl
ayers."'
1280PRINT'"Player 1 controls the top swimmer
. The"
1290PRINT"swimmer is moved by pressing 'A' a
nd 'Z' alternately, and turned by pressing 'S'
."
1300PRINT"Player 2 controls the bottom swimm
er"
1310PRINT"with the keys ':','/' and ';'."
1320PRINT'"You must reach the edges of the s
creen before turning or your length will not
be allowed."'
1330PRINT'"If you select the one player opti
on the computer will control the bottom playe
r."'
1340REPEAT
1350INPUT "How many players (1 or 2)",ANS$
1360UNTILANS$="1" OR ANS$="2"
1370IF ANS$="1" C%=TRUE:REPEAT:INPUT "Diffic
ulty level (the lower the number the harder
it is)",D%:UNTIL D%>0:D%=D%+1 ELSE C%=FALSE
1380REPEAT
1390INPUT"Number of lengths",L%
1400UNTILL%>0
1410ENDPROC

```





The Mastertronic User Magazine

Tronix



**Immerse yourself in Mastertronic info by taking up our discount offer for membership of the new Tronix club**

Mastertronic, the budget software label, has recently launched a new club for all its fans and in a unique offer for HCW readers we can give you a discount on the membership fee.

Members of the club will receive a quarterly club magazine called Tronix, packed full of interesting contents for computer fans. For example the first issue will feature full details, photos and reviews of the new Mastertronic titles, including Nonterraqueous and Clumsy Colin.

There will be a full length story in each magazine and the chance to enter interesting competitions. The prize in the first competition is a full set of Mastertronic titles for your machine and the chance to win a royalty contract. In case you hadn't already guessed, all you have to do is design an original game idea for a new Mastertronic title.

Added to all this there will be readers letters, jokes and puzzles. In all it looks very similar to HCW but only quarterly!

Each new member will also receive a free Tronix badge and a free Tronix pen in their membership pack.

There is one other free gift, and we have saved the best until last! Each new member can choose one Mastertronic title, from the full list, as a free gift. This means that your membership of the club costs you nothing, Mastertronic games themselves sell for £1.99 in the shops.

In all, club membership at £1.99 would be a bargain but with our exclusive special offer we can give you a discount of 50p making the whole package

just £1.49, even less than the cost of a Mastertronic game.

All you have to do to take advantage of this offer is follow the instructions on the coupon and then you can look forward to the postman staggering up the drive with your new members pack. Orders can only be accepted, at this rate, with the original coupon from HCW, photocopies cannot be accepted.

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The Mastertronic User Magazine

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**Incompatible**

Does HCW stand for "Hearts Club Weekly"? So Malcolm Logan, HCW 119, would like to know my age. Well I am fourteen years old.

I am rather disappointed to read that he says "What is there apart from computers and girls?" Surely this should have reads girls and computers, especially if he hopes to make an impression.

Pity he owns an Amstrad and not a C64 (like me) otherwise we could have got our computers together and made some fine music (ahem!!)

*Karen Rolph, Heaton*

**All for M5**

I am writing a few words to tell you of a club that is now available only to M5 computer owners. I produce a monthly cassette-based magazine which offers teaching as well as game playing skills. I couldn't help writing this letter when I noticed a few enquiries about the M5 in a recent issue of HCW.

The manuals for the M5 are diabolical to say the least but I have brought the basics and the technical terms down to laymans language and am attempting to take the user through programming step by step.

You published a letter of mine in HCW 104, where I stated that I was writing a book on the M5, well the book is going strong and interest in the M5 is picking up thanks to you and everyone else who has contributed to my cause.

For further information on the M5 Club contact:

**Jeff Andrews, 19 Canberra Towers, Weston Estate, Weston, Southampton SO2 9JT**

**Reviewers reviewed**

I have been buying your magazine since January 1984. However I feel that the usual high standards of the magazine have begun to fall.

Firstly, the reviews section. Although this caters for a wide range of users the reviews are not very extensive. I think a great improvement could be made if fewer reviews were done allowing them to be more detailed and the inclusion of screen shots, preferably colour, would be an added bonus.

Also why don't you re-introduce the "One Man's View" features as I'm sure they would be popular. Games listings are of little use and should be abolished. I don't believe that many people type them in now that commerical games have reached such a high standard. However I think you should continue to include utilities and machine code routines as they are often very useful.

Overall my criticisms are only minor points, the news pages are well informed and the competitions excellent.

*W G Barker, Tyne and Wear*

**Computers take turns**

Are HCW readers paranoid? I ask this question because in the last few issues all that I have read in your letters pages are things like, "You've got a vendetta against the Electron" or "Your magazine is anti-Spectrum". If your mag is against so many computers, who reads it?

Seriously though your mag is the only one I know of which does give an unbiased look at most largish computers. What does Demetrius Kaller, HCW 119, mean when he says you have a bad attitude towards the Spectrum? Hasn't he seen previous HCW's? In the past 12 months or so the Spectrum has dominated your pages, and I'm not complaining. Now it's time for another computer to have its turn.

And John Hancock must not have seen the HCW from only four or five weeks ago when the reviews were about 70 per cent Electron. Gripe over.

*Philip Cox, Ellesmere Port*

**Reach for the sky**

Having read your recent review on Skyjet for the Commodore 64, I noticed that you didn't know how to play it.

I own the game myself, and although the instructions are very brief, I have worked out the idea and some tactics.

The idea is to collect the radar equipment and drop it onto the construction platform. First of all, to pick up the radar equipment all you have to do is land on top of its position on the hill. Easy!

Then the equipment is automatically picked up. Once picked up, the radar equipment you carry disables your ability to bomb. Once over the construction platform, you drop the equipment using the same method as is used to bomb. You can't miss the construction platform unless the equipment is destroyed in mid-air by the airborne reinforcements.

To bomb, the only possibility is to hold down the fire button on the joystick. After about four pulses of missiles a bomb will be released. On the first level the submarine has to get from one end of the landscape to the other and back. But on the later levels the trip is halved so it only has to get to the other end of the landscape once.

One way to destroy a submarine is to actually land on the water and keep it between the ships until the submarine comes along — then bomb it. One thing you must be careful of is that if you have landed on a hill, and you bomb, you will be destroyed.

Also, if you ask me the filter is not very effective, not competing with that on Raid Over Moscow.

Skyjet is really a very good game if you can work out the way to play it.

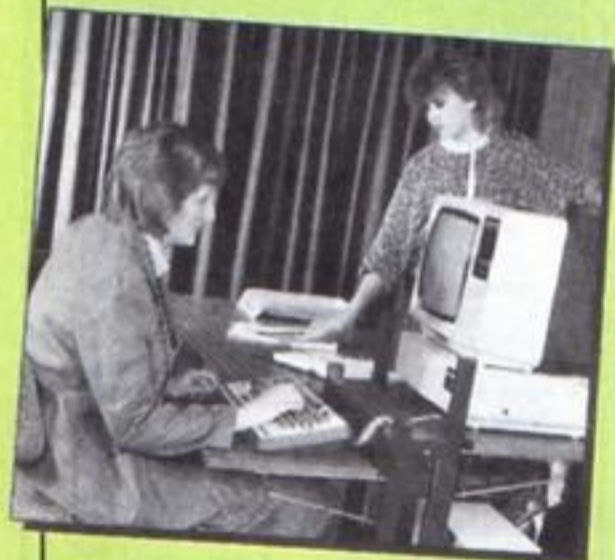
*Richard Lucker, Huddersfield*

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Hago are offering one of their Personal Computer Workstations in this week's competition and all the optional accessories that go with it too. This makes our prize worth over £90 to the winner.

Each of Hago's workstations is built to an extremely sturdy design and finished in chocolate brown with simulated teak worktops. There are shelves for the VDU, the keyboard and for accessories. The copy holder allows easy typing of program listings by holding the magazine at the correct height and angle.

In keeping with the best principles of ergonomic design the unit has adjustable shelves so that any size of system can be incorporated and the unit can be adapted for differing users too.

The Basic Workstation normally costs £68.33 but with the optional shelf and copy holder this prize is worth over £90 and is just waiting for the winner of this week's free to enter competition.

**How to enter**

This week we want you to think carefully about the advantages of owning a Hago workstation. Below we list six advantages and we want you to decide what order our editor would put them in.

Each one has a letter so when you have decided on the order write the appropriate letter on the entry coupon and fill in all

the other details.

Post your entry, sealed in an envelope, to Workstation Competition, Home Computing Weekly, No.1 Golden Square, London W1R 3AB, to arrive not later than first post on Friday 9 August 1985.

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- E Ergonomic design reduces fatigue
- F The strong and stable base has castors to make movement easy

**The rules**

- Entries will not be accepted from employees of Hago, Argus Specialist Publications and Alabaster Passmore & Sons. This restriction also applies to employee's families and agents of the companies.
- The How to enter section forms part of the rules.
- The editor's decision is final and no correspondence can be entered into.

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**Letters**

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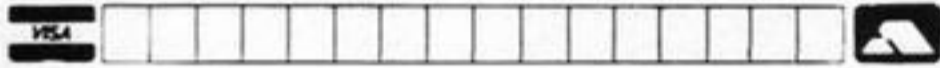
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**Programs** are always supplied on cassette and are accompanied by full details of the program variables, how the program works and any hints on conversion you can offer. Please type these details double spaced. Listings are helpful but not essential. What is vital is that the programs should be completely error free, so please double check.

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\_\_\_\_\_

Program title

Machine



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\_\_\_\_\_

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**Pen tips**

On the Amstrad CPC464 the INK colours for each PEN may be reset to their default value by using the statement, CALL &BBFF I have found however that if the Amstrad is in Mode 0, CALLING &BBFF creates an effect similar to partially resetting to MODE 1. i.e. it looks as though MODES 0 and 1 have been mixed giving for instance 20 columns (as in MODE 0) with MODE 1 size characters.

In programs I write therefore, I usually include the line 10 ON BREAK GOSUB 1000 at the start of the program and 1000 MODE 1:CALL &BBFF at the end to prevent the program being stopped leaving the user with an awkward set of INKs.

I hope these tips are of use to you and your readers.

J W Constable, Acton, London

**Thames Television Database Micronet 800 Crossword Competition Week Four**

**Final Clue**

**Part A**

"The Cobb has invited what familiarity breeds for at least seven hundred years, and the real Lymers will never see much more to it than a long claw of old grey wall that flexes itself against the sea. In fact, since it lies well apart from the main town, a tiny Piraeus to a microscopic Athens, they seem almost to turn their backs on it. Certainly it has cost them enough in repairs through the century to justify a certain resentment. But to a less tax-paying, or more discriminating eye, it is quite simply the most beautiful sea-rampart on the south coast of England. And not only because it is, as the guide books say, redolent of

**Reader's hi-score table**

Name	Game	Machine	Score
David Chambers	Skramble	C16	36,330
Craig Jones	Skramble	C16	139,400
Paul Green	Beamrider	C16	82,450
	Flak	C64	30,100
Mark Hardy	TI-Invaders	TI-99/4A	16,756
	Parsec	TI-99/4A	5,676,000
	Munchman	TI-99/4A	190,510
	Buck Rogers	TI-99/4A	372,692

**Solution to last week's puzzle**

24. Shift each digit one place to the left and the 6 times table appears 6,12,18.. 2 completes 42 and 4 begins 48.

3/7. Follow each "fraction" from top to bottom and then the top of the next and the 7 times table appears 7,14,21.. 3 completes 63 and 7 begins 70.

27. Reverse each number and the 8 times table appears! (It would have been too obvious to begin with 8.)

seven hundred years of English history, because ships sailed to meet the Armada from it, because Monmouth landed beside it... but finally because it is a superb fragment of folk-art.

Primitive yet complex, elephantine but delicate; as full of subtle curves and volumes as Henry Moore or Michelangelo; and pure, clean, salt, a paragon of mass. I exaggerate? Perhaps, but I can be put to the test, for the Cobb has changed very little since the year of which I write..."

**Part B**

"At the Great Norman Abbey

circa 305, The first Christian martyr, and namesake, died, Running through the town is the River Ver, Past the excavated ruins on view there."

**END OF COMPETITION**

All entries must be sent to

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Durrant House  
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London EC1R 5EJ

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